VOL 20 NO 1 FEB 1979

AIR FORCE

engineering & services

QUARTERLY

IMAGES

perceptions by air force people for air force people

From the Director

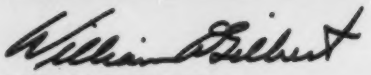
People: Responsibility and Resource

As I travel around the Air Force from base to base and command to command, with the CESMET and on other visits, one thought continues to occur to me. So much of what we in the Engineering and Services professions do has such a profound impact on people. I see it in the obvious: dormitories that we're upgrading; good service at a dining hall; a SMART team hard at work; a crew out repairing a water main late at night in family housing. But even when it's less obvious that what we are doing is "for people," the concept holds true. When we provide facilities to beddown a new weapons system, or keep the runway clear so we can launch during a snow storm, we are contributing directly to the Air Force mission of defense of our country. And to my way of thinking, our country is our people!

So the bottom line is always people. Whether we're painting in family housing or responding to an aircraft on fire on the flight line, what we do in Engineering and Services is provide key, essential, often critical support, across a tremendously broad spectrum of functional responsibilities, to people. Few, if any, other support functions have such a profound impact on how well Air Force people live, work, and yes, fight, as we do.

When I think of the jobs that we perform and the services we provide on Air Force bases around the world in this light, I'm often awed by the magnitude of the responsibilities we face. But my unshakable confidence that we can meet these responsibilities is continuously reinforced by what I see and hear, whether in my office or visiting Air Force bases. For while service to people is our paramount responsibility, people are also our most valuable resource—our own Engineering and Services people. We are doing our job and accomplishing the mission better today than we ever have before because we have good people all over the world who are fully aware of their responsibilities and dedicated to meeting them to the best of their abilities. I meet them everywhere I go—in the BCE shops and offices I visit, in the dining halls and housing referral offices and fire stations, on the DCS staffs at our major commands, and in all of our special agencies. I'm proud to be on the same team with these fine people.

I'm also confident that our people, working together as a team toward our common objectives, will be more than capable of meeting the many challenges we face in the year ahead. Our Engineering and Services business is indeed healthy. We can be better, and we will be if we never forget that improving our service to people, in all its facets, is our primary challenge and responsibility—and our Engineering and Services people are clearly our most valuable resource in meeting that responsibility. Let us all have as our common goal in 1979 to do the job even better. I accept the challenge. I hope each of you do.



WILLIAM D. GILBERT
Major General, US Air Force
Director of Engineering and Services

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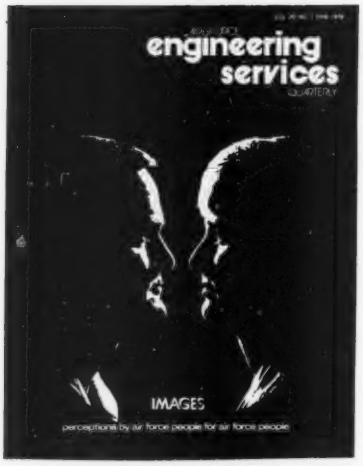

Cover Photo: Jim Atkeisson, AFIT

EDITORIAL STAFF
George K. Dimitroff
Editor
Civil Engineering School
Lindsay R. Edwards
Art Editor
AF Institute of Technology
Lilyan V. Dayton
Editorial Assistant
Civil Engineering School

CALL OR WRITE
The Editor, AFIT/DEJ
Wright-Patterson AFB OH 45433
AUTOVON 785-2156

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that's where the trouble starts

You know the world makes more sense if you wear glasses with red lenses. I know it makes more sense through blue lenses.

We look at the same yellow wall. You swear it's orange. I know it's green.

That's where the trouble starts.

Your mind is a pocket calculator programmed for units of three. My mind is programmed for twos. We are both given the cue "six." You react with an "18." I respond with a "12."

That's where the trouble starts.

What did Fritz Perls mean when he said "Get rid of the trash in your head?" He meant **"That's** where the trouble starts."

1. **Your boss been looking at you funny?**

Synchronize your perceptions. Maybe **he** perceives that "ones" on OERs are earned by results while **you** have been thinking they were earned by putting in 60 hours per week. Could you be thinking that what he wants is **attendance** when what he **really** wants is a "make it happen guy?"

2. **Your troops been looking at you funny?**

What **you** perceive as your role and the role **they** expect you to play may fit together like two porcupines. Same point with your kids. Did you really understand what he was saying when he muttered "I don't want you to be my buddy. I want you to be my dad?"

3. **Always order the lowest priced item on the menu?**

Come on now, you are not **that** broke! Take a look at that self-image. There is no law against liking yourself. (The Chateaubriand for two at $21.50 is very good tonight.)

4. **Wonder why it is difficult to turn your outfit around overnight?**

Think some more about "Perceptual Screens" and "Perceptual Lag." People will start turning around when they see that getting you what you want is the best way for them to get what they want.

5. **Getting uptight?**

Check your own perceptions. Maybe you are hung up on that old bit about "Whatever is worth doing is worth doing well." That can drive you up the wall. Sure, **some** things should be done well; but there is therapy in selective mediocrity. How about taking a nice average walk with your wife? Or cutting your grass in a medium sort of way and enjoying a couple of average beers with your normal next door neighbor?

Where shall we place the emphasis?

One of us values Readiness. Another values Productivity. A third is into Quality of Life.

Where do you start when you have a problem like this?

You could "pull rank" and settle it fast. You could leave that problem for the man who follows you. You could start by finding out **what is being perceived** when words like "Readiness," "Productivity" and "Quality of Life" are used.

When you can let go of generalities and begin to feel comfortable seeking, verifying and relating specifics, congratulate yourself. You are becoming . . . perceptive.

PERCEPTIONS

believing is seeing

by Professor Rich Johnson

Perceptions are what this article is about. What they are, where they came from and what we can do about them on and off the job follow. The points here do not apply only to the people in Roads and Grounds or only to squadron commanders. Wherever and whoever you are in Engineering and Services, your perceptions influence what you do, how much you do and how well you do it.

Do perceptions relate to the new **AFR 85-1**? You bet your next effectiveness report they do!

Do perceptions relate to productivity? You bet your job they do!

Do perceptions relate to Air Force readiness? You bet your life they do!

Perceptions were Plato's subject when he discussed shadows in a cave and concluded that people react more to shadows—images—than to reality. Perceptions were in mind when Epictetus said "Men are disturbed not by things, but by the views they take of them." Perceptions, 2,000 years later, were the point of Dr. William V. Haney's statement that ". . . people do not respond **directly** to reality but to their **perceptions** of reality. . . ."

Today, perceptions are what Maj Gen William D. Gilbert is talking about when he discusses the high visibility of Engineering and Services on every Air Force base. In this article, I'll cover: (1) what perceptions are; (2) different kinds of perceptions; (3) sources of perceptions; (4) the power of perceptions and "base blindness;" (5) perceptual screens; (6) perceptual lag; (7) the formula for practical use; (8) perceptions and emotions; (9) perceptions and work; and, (10) changing the perceptions of your clients and customers.

Perceptions are . . .

My brand new Air Force-issued Houghton Mifflin dictionary says a percept is: "An impression in the mind of something perceived by the senses . . . the basic component in the formation of concepts." It goes on to say that a concept is: "A general idea or understanding, especially one derived from specific instances or occurrences."

You and I have many "impressions in the mind." We call them many names: maps, models, hunches, inclinations, assumptions, first impressions, roles, images, hypotheses, theories, beliefs, principles and values are some of the labels we use. To show how perceptions influence what we do, I'll make a distinction between people and rabbits. Both have an "automatic" system that causes their hearts to beat and their stomachs to function. Both have a stimulus-response system that causes rapid reaction to threat or pain. If we stopped here, people would behave much like rabbits—and rabbits would behave like people.

What makes the big difference in their actual behavior is that word "perceptions" that General Gilbert, Plato, Epictetus and Bill Haney were talking about. People seldom react directly to a cue or stimulus. They react to **their personal perception** of that cue. Rabbits are more stimulus-response types. People are more stimulus—perception—response types. Our reaction to traffic lights and stop signs is pretty much stimulus-response. Our reaction to cues even slightly more complex is different. It is stimulus—**perception** of that stimulus—and a response **to our own perception.** Let me give examples of this difference and its importance as we look at. . . .

Kinds of Perceptions. . .

I have gone up and down the stairs to my office thousands of times without falling, yet it has been years since I've actually **seen** those stairs. The low beams on my bifocals are set for 18 inches. Anything beyond that looks like grits. I take a cue from the railing, another from the first

step and bound up and down like a goat. The cues trigger a map or model in my head that I find quite dependable and useful. What was the process here? The cue of the railing triggered the mental model of the stairs—and away I go like a mountain goat. Stimulus—**perception**—response.

We all do things like that. How do you start your car in the dark? You can't **see** all the gadgets. The feel of the seat and the wheel gives you cues. The cues trigger perceptions, models, "programs" in your head. You are in business as long as you own that particular car.

At a fork in a strange road, you have a powerful hunch or inclination to take one branch rather than the other. Why? Because "an impression in the mind" tells you **that** is the better choice.

You didn't take your raincoat because you **assumed** it wouldn't rain. Assumption? Another impression in the mind. Nobody ever promised you that all your perceptions would be true or accurate.

Woman's intuition? Nonsense. Women's lives program them to look for different cues and to decode or perceive them differently. Many women can "read" events at a party as accurately as you and I read **AFR 85-1.**

We act in the special ways that we do because we believe certain things to be so. We each can be doing something different, yet each of us is doing what makes sense . . . **not** in terms of reality . . . in terms of our personal image or perception of reality. You march to the cadence of your perceptions; I march to the cadence of mine.

The social sciences have given a lot of attention to the many "roles" that you and I play everyday; the role of the female and the male; of bosses and subordinates. We each play our roles as we perceive they should be played; as we believe we are expected to play them.

"Self-image" has been big in the 70s. The idea is that your perception of yourself influences what you do, whether you continue your education, the kind of job you strive for, the kind of friends you feel you "deserve." Again, stimulus—**perception** (of role or self)—response.

In other sciences, words like "theory" and "hypothesis" relate to what I'm saying. These are perceptions, mental maps or models in various stages of testing and development. Some of these have proven over the years to be close to reality and therefore quite useful. Alfred Kuhn in **Unified Social Science** says that there is a mutually supporting relationship between facts and theories: "As we improve our models we improve our ability to identify the pieces of reality that correspond to them, and as we improve our ability to identify pieces of reality we are better able to improve our models." Thomas S. Kuhn in **The Structure of Scientific Revolutions** warns that sometimes what seemed to be a promising model is thrown out entirely in favor of another and, if this change is large enough, it can result in scientific, religious or ideological revolution. Again, stimulus—perception—response. A change in the perception can result in a revolutionary change in a society or an individual.

Perceptions range all the way from hunches to principles and values like "Duty, Honor, Country." The difference between a principle and a platitude is belief. It is the strength of your personal belief in a particular perception that makes the difference.

Sources of Perceptions . . .

In one word, perceptions come from living.

They come from our very early childhood experiences and feelings. They come from our parents, friends, schools, churches, heroes, television, books

and bosses. They come from our failures and successes in living and working. Dr. Morris E. Massey of the University of Colorado calls the failure or success experiences after childhood "significant emotional events." Whatever people choose to call them, you and I know that they are significant and they **are** emotional. Some are peak experiences sparkling with the elation of discovery. Others are gut-wrenchingly terrible—but from them we may gain or change a perception and due to that, we may behave differently.

Power of Perceptions...

I say we **may** gain or change a perception and we **may** behave differently. Why isn't this a sure thing? Well, what is significant and emotional to me may be just another routine day to you. Then sometimes we are **ready** for a change and sometimes we are not. Usually this readiness has been building up for a time, then one day the straw comes along that breaks the camel's back. On **that** day, the event is significant and often emotional.

First impressions can give a perception both power and momentum. The first few times we see a person or an Air Force base, we are quite aware; we are checking things out with care. So first impressions can make a big difference. But, follow the idea one step farther. The first impressions reduce themselves to a form of shorthand in our mind. We then react to the shorthand cue without seeing the base or person as they are today. This is the "momentum" of the first impression. It leads to "base-blindness." We react to a few cues as we drive on base, but we no longer "see" the gradual changes. Grass grows, paint peels; but the cues from our first impressions linger until a significant emotional event (such as a new Base Commander) modifies our perception.

Other factors that can increase or decrease the power of a perception are novelty, frequency, utility, proximity, feedback and reinforcement. **Novelty** is the vividness or impact of early impressions. **Frequency,** used by TV commercials, is the number of times that you are made aware of a new concept. **Utility** is the usefulness of the idea. **Proximity** or involvement means that what is "near and clear has more influence on you than what is far and fuzzy." **Feedback** modifies the strength of perceptions if it is predictable rather than random—and if it is related to a certain amount of pleasure or pain. How well something new matches or reinforces what we already know is one more. We go out of our way to seek ideas that reinforce those we already have—and we deny, dodge or discredit events that might start a revolution among our own prejudices, perceptions, models, values—whatever you choose to call them.

Perceptual Screens...

Perceptions maintain power by the ways they relate or mutually reinforce each other in our minds. This is our "perceptual screen," our personal interlocking network of beliefs. If one belief is threatened, they **all** are perceived to be vulnerable—a sort of mental "domino theory." To avoid threats to our screens, we seek out people with similar screens. We become friends; form groups. This is what makes it almost too easy to stereotype people in close-knit groups. They **do** drink the same beer, enjoy the same recreations and vote the same way **because** they have the same perceptions. They share reinforcing value systems. If you threaten their model, they may break your body.

Perceptual Lag...

Remember now, perceptions are not what is out there in the real world. Perceptions are more or less accurate models inside people's heads. Because these models satisfy people, they are inclined to keep the models long after the facts out there in reality have changed. People behave in terms of their old perceptions, not in terms of the new facts. John Kenneth Galbraith called this "The Conventional Wisdom." We can call it "perceptual lag."

At anytime in history, this is the factor that explains why the tactics that won the last war are sure to lose the next. An example is the success of trench warfare in World War I and the failure of the cement trench—the Maginot Line—in World War II.

The Formula...

Dr. Albert Ellis developed the "A-B-C-D" formula that brings what I have been saying together for your practical use.

A = Activating event
B = Belief system
C = Consequence
D = Dispute

The **Activating Event** is the stimulus or cue. The **Belief System** is your perceptual screen. **Consequence** is the feeling or emotion triggered **not** by the event—by your **beliefs** about the event.

Actually there are two "Bs." There are **rational** and **irrational** "Bs." The **Consequence** of irrational Beliefs is irrational emotion . . . feeling totally worthless . . . useless . . . "born to lose." The **Consequence** of rational Beliefs is rational emotion. . . normal happiness . . . frustration . . . sadness. That is where "D" comes in. The point is to **Dispute** or question your Beliefs and replace the irrational ones.

The "I must always be perfect" Belief has a **Consequence** of depression because nobody's perfect. After **Disputing** it, you may come to believe "sometimes I must try to be perfect—but sometimes it is OK to be raunchy." The **Consequence** of **that** perception can be perfectly normal emotions that are easy for you and others to live with.

Perceptions and Emotions . . .

Many perceptions are imprinted in our minds in "all-or-none," "always-or-never" terms. If you honestly believe that you should "stand up and be counted," "put up or shut up" on **all** issues that **ever** touch your life or your job, you'll be a psychological basket-case in no time. If you walk out of a course on motivation believing that **everything** you do will **either** motivate your people **or** tick them off, your job will be emotionally hairy.

On the other hand, if you believe that **some** things motivate, **some** things tick people off—and there is a big fat area where people honestly don't give a rat's buttock **what** you do, the emotional price you pay for doing your job will be less.

Am I saying your perceptions can drive you to drink? Yes, indeed I am. Many perceptions are irrational, incomplete or outdated because they are stowaways. We didn't know we were carrying them around; therefore, it would not occur to us to check them out. They are those unrecognized and unexamined perceptions that chase you into bars.

Perceptions and Work. . .

What you and I do—what all of us do—is a matter of perception. This includes how hard we work, the quality of our work; it includes everything from completing projects that contribute directly to base readiness down to the way we shine our shoes.

The values we hold influence the decisions we make.

The principles, hypotheses and theories that we perceive to be relevant influence our effectiveness as opportunity makers or problem solvers.

Our perceptions of ourselves and the roles we play influence the impact we have on others.

Our assumptions, intuitions and hunches influence how well we do the multitude of routine tasks that are part of every job.

Changing the Perceptions of your Clients and Customers.

A perception that I believe you and I share is this: **To do your job in Engineering and Services today, you need all the help and cooperation you can get—from everybody on base.** The Base Commander must perceive your squadron as a "make it come true" squadron. The women in base housing must perceive O&M people as being helpful, cooperative and skilled in their work. The people in hangar two must perceive your people as being every bit as dedicated and professional as **they** are.

You get help and cooperation from the people on base who perceive that you are helping them. You get headaches from the people whose perceptions tell them you are **not** helping them.

It is a fact of your business, and you are not alone here, that your work causes you to be invisible when things go well—and highly visible when they don't. People **expect** the water to run, the snow to be removed and the buildings to be comfortable. Your visibility increases when the service isn't right, when the toilets don't flush, when the runway deterioriates. Your profession has put you in a situation where people's perceptions of you and your work are formed when things are at their worst rather than their best. If you want your clients and customers to perceive you as a squadron that does quality work in a professional way, the essential point is to deliver. **Do** quality work. **Be** professional. There is no way around the fact that you have got to produce.

In addition to producing, there is more you can and should do to help people on base perceive the quality and professionalism of your work. These ideas have been around for a long time. They have been around a long time for only one reason: **they work.** They are not in random order, they are a series of steps. Like any step-by-step method, you don't leave out steps or skip around. To change perceptions in this way, you start with step one—and move out from there in an orderly fashion.

1

One: Get their attention. Create awareness. If people have never heard of your good work, they will not form **any** perception of it. Many ideas are competing for attention daily. Your idea will not get attention unless it stands out from the rest. Keys here are imagination and creativity. If you have novel, fresh, varied ways to draw attention to the good work of your squadron, you have step one under control.

2

Two: Give them the 'Gee Whiz' figures. First you get their attention and then they must know the bare-bones details that you want them to know. Here you are getting in the facts you want them to have . . . how many gallons, miles, manhours, dollars. These simple, relevant facts go into step two.

3

Three: Show them how it works. Show the logic, the cause-effect relationships. Show them how the parts fit together—how your work relates to theirs. Except for matters of faith, people only accept what they understand—so explain how things work. Remember, anything people are not up on, they are down on. You don't want them down on Engineering and Services, so go out of your way to explain, teach, show,

demonstrate, visualize how you help them get the good things they want.

4

Four: Highlight the advantages. You have got to show them how the squadron, the project, or the plan works—but that is not enough. Point out the **advantages** of the plan. Don't leave this to chance. Don't assume the advantages are evident. Lay them in their laps—in big type—and with proof or illustrations of each advantage right at your fingertips if you need them. The secret here is doing your homework. You need it on this step and the next one.

5

Five: Custom-tailor it. You got his attention, gave him the facts, showed him how it works and cited advantages in general—now get specific. How will it make **this** base more effective? This is the other step where doing your homework pays. Know your man and know your subject. Make him hungry, then feed him. Pay special attention to his question. Often his question is not an objection, quite the opposite—you **have** made him hungry and his question is a plea for food. When I ask the car salesman: "But does it get good gas mileage?" I've already made up my mind I want the car. My question is a plea for evidence to help me justify my decision. By doing your homework, you are making it easy for him to do what you want him to do—to perceive what you want him to perceive.

6

Six: Help him maintain his perception. You made your point, now maintain it. This is called reinforcement. You are not out to win a debate, your object is to change behavior. You do this by changing his perception and then reinforcing the new perception. This means you **continue** to make him aware that his decision was the right one. In a subtle way, you are reworking steps one through five here. Keep him aware, give him facts, show how well the new way works, highlight and custom-tailor evidence that his choice was the right choice.

Briefly, here are thoughts I mentioned earlier in this article that you can use when you are changing perception and behavior. On steps one, two, three and four, remember: **Novelty, frequency and utility to get attention.** On steps two, three, four and five, remember: **What's near and clear beats what's far and fuzzy** when you are selecting examples and evidence to change someone's perception. Use examples from your base, your squadron. On step six, remember: **Feedback and reinforcement.** Feedback that is consistent and pleasing reinforces the new perception. Feedback that is consistently distressing reinforces the perception that you or your squadron should be replaced.

These steps are old and basic, but if you want to change a perception without doing a lot of additional reading and research, I would respect them—they still work.

Summary...

General Gilbert stresses the importance of perceptions in Engineering and Services because of the high visibility of your work on every Air Force base. The General is in fitting company—Plato would go along with that. Epictetus did when he said "Men are disturbed not by things but by the views they take of them." Dr. Haney agreed when in his book **Communications and Organizational Behavior** he said "... people do not respond **directly** to reality, but to their perceptions of reality...."

Here in this article, you and I thought together about: (1) what perceptions are; (2) different kinds of perceptions; (3) sources of perceptions; (4) the power of perceptions and "base blindness;" (5) Perceptual screens; (6) perceptual lag; (7) the formula for practical use; (8) perceptions and emotions; (9) perceptions and work; and, (10) changing the perceptions of your clients and customers.

As you have read and thought about these points, I hope you do see connections—relationships—between perceptions and . . . the new **AFR 85-1;** productivity; and Air Force readiness . . . if you do, you can bet your life (and mine too) that we will meet our challenges in Engineering and Services; we'll deliver quality work in a professional manner—and we'll have even more good times working together in the future than we have in the past.

E&S

RICH JOHNSON *is a Professor of Management in the School, Air Force Institute of Technology, Wright-Technology, Wright-Patterson AFB, Ohio. He has taught for The Ohio State University and has headed the Management Appraisal and Development Division of the Nationwide Insurance Companies. He has lectured for 20 universities and 100 American companies and has taught in the Middle East, Far East, Canada and Europe.*

CIVILIAN ATTRITION

by CDR W. E. Peterson

Editor's Note: The following article is reprinted with permission from the Fall 1977 issue of *The Coast Guard Engineer's Digest.* Civilian employees make up over 50 percent of the total workforce of Air Force Engineering and Services. Although the statistics in this article involve those for civilians employed by the Coast Guard, the points made by the author on how to better understand the business of attrition can easily be applied to the Air Force.

COMMANDER PETERSON *was Chief, Civil Engineering Branch, Twelfth District (San Francisco) until his recent retirement from the US Coast Guard. He is a graduate of the US Coast Guard Academy and holds a master's degree in systems management from the University of Southern California. He is a member of the American Management Association, the Society for the Advancement of Management, and the Society of American Military Engineers.*

Formula for Attrition

Recent analysis indicates that attrition of civilian personnel from Civil Engineering is a cause of serious concern. While military attrition has received considerable attention, the civilian side of the problem appears to have been neglected. As 75 percent of the personnel within Civil Engineering are civilians, the subject merits attention.

Attrition is among the least understood of the phenomena affecting the efficiency and effectiveness of organizations. An adequate definition has not even been developed; however, the most common one can be expressed in mathematical form.

$$\text{Attrition Rate} = \frac{\text{number of terminations}}{\text{average onboard count}} \times 100$$

This rate is usually expressed over a period of one year. The problem with this definition is that it fails to express what categories of people leave, why they left, and when they left during the year. The effect of a single clerical position changing hands a number of times may be far different than a broadly based turnover among professional or technical personnel. In spite of these defects, the definition is the best available.

Depending on the circumstances, a certain amount of attrition may be a healthy phenomenon. It is one of the few accepted means of reducing the size or altering the structure of a government organization in response to changes in workload. It helps avoid reduction in force and serves as a vehicle for promotion from within. Very low attrition rates may imply stagnation, large numbers of people in dead end jobs, low skill levels and complacency.

Costs

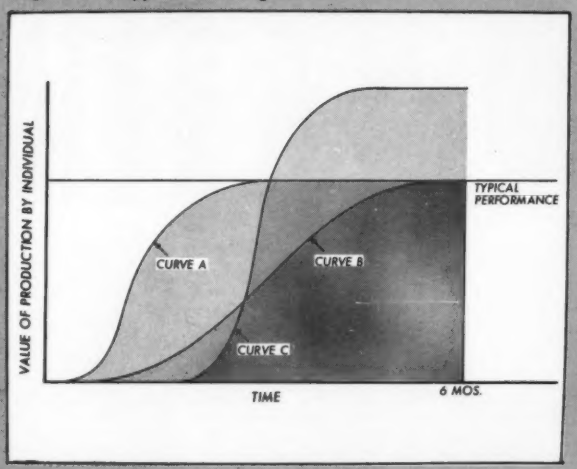
Excessively high rates are a greater and more frequently encountered problem and can result in astonishingly high costs in both tangible and intangible terms. These can be conveniently divided into departure, vacancy and start-up costs.

It is safe to say that no government employee is taken unawares or on short notice on matters involving voluntary or involuntary termination. It would be a rare person who would not begin to take a short-timer attitude at some point. Analysis suggests that a typical Civil Engineering employee's productivity in quantitative terms may taper off to an average of 60 percent of normal during this period. Decline in the quality and timeliness of his work may increase construction costs. The effectiveness of design may decline and result in additional tangible and intangible costs far into the future. In addition, if the individual retires at any date short of the mandatory retirement date, at least a portion of the Federal Government's contribution to retirment might be considered an attrition cost.

Once the position becomes vacant, other costs become involved. The departee's work must be redistributed, with attendant inefficiencies, disruption, errors and backwatering. If individual workloads rise 20 percent or more above those typically encountered in Civil Engineering, there may be an unacceptable reduction in the quality of design and construction. The vacancy must be advertised, meetings held, letters and memos of justification prepared, interviews held and decisions made. **Ad infinitum.** A large part of the recurrent costs of maintaining the Civilian Personnel Branch can be charged to recuiting and thus to attrition.

Once a new employee is hired, considerable "start-up" costs face the branch, such as another reallocation of existing work, training and low initial productivity. As illustrated in **Figure 1,** there is a relationship between productivity and time on the job. It may take the familiar "s" shape so common to business and psychology. Initial productivity is low, but it accelerates as the employee gains experience and begins to "rap" with his job. After a period, the rate of gain slows down and levels off. Further experience may result in only limited gains or even a loss of productivity. The shape of this curve varies widely, as it is dependent on the individual's ability, receptivity and experience, the skills requirements of the position, and the ability of the Branch to "break in" new employees. Low-skill positions, such as janitor, typically have very steep learning curves such as in Curve A, where normal productivity is achieved rapidly. In such cases, the cost of low initial productivity is very small. It can be assumed from the diverse and professional nature of the work of Civil Engineering and the almost total lack of intrabranch transfers among civilian employees, that the learning curve for Civil Engineering is similar to Curve B. Many supervisory personnel have told me that it generally takes six months un-

Figure 1: A typical learning curve.



til a new employee approaches a "normal" state. If it can be assumed that the curve is linear, the labor cost of low initial productivity is about three month's salary. Through a formal training program, it is sometimes possible to achieve greater productivity as shown on Curve C. However, few Civil Engineering Branches have formal programs, relying instead on the less effective "on-the-job" training; in effect, leaving the new employee to his own devices.

There are many intangible costs as well. High attrition promotes high lapse rates which, in turn, invite permanent ceiling cuts. Attrition promotes instability and a crisis situation for management. Short-timers may be a focal point for dissent and low morale. Volunteers may wish to justify their actions by discoursing on the greener pastures that lie elsewhere.

When Is It a Problem?

How can one judge when attrition costs become excessive? There is no simple all-encompassing answer, because the effects are complex. However, professional level organizations with relatively shallow learning curves may have serious trouble maintaining their effectiveness if broadly-based turnover exceeds an annual rate of 20 percent. This is obviously very rough, as it is purely quantitative and does not account for who, why, when and under what circumstances attrition has occurred. It is, however, a useful point of beginning. Based on this rule of thumb, attrition is a serious problem to Civil Engineering in some districts. In fiscal year 1974, the last date for which figures are available, the rate for branches ranged between 0 to 50 percent with a mean of 20 percent and a standard deviation of 15 percent. Seven branches had rates in excess of 20 percent.

Causes

The identification of the causes of a problem is essential to its control. What causes attrition? The causes can be categorized in many ways, but it is useful to break them into two types, involuntary and voluntary. Involuntary causes include death, sickness, family problems and so forth. Since these are obviously not subject to control, they do not form a fruitful area of endeavor for the manager. It is the area of voluntary attrition that presents the challenge, since, to some extent, it can be controlled.

In an attempt to determine the various causes of voluntary attrition, I obtained opinions from two sources, personnel from within Civil Engineering and the writings of behavioral scientists. The conflict between them is enlightening.

Pay and Laziness

During the last few years, I have had informal discussions on attrition with many branch chiefs, civilian supervisors and employees throughout the Coast Guard. Two almost universally expressed opinions for the high attrition rate involved pay and the avoidance of effort. Stated bluntly, many believed that man is an economic animal who works for financial reward only and/or that he is a shirker who will avoid effort whenever possible. If higher pay or lower workloads are available on the "outside," attrition will occur, since nothing else counts. Two simple correlation analyses and the facts concerning pay and workload cast doubt on the validity of these opinions.

Figures 2 and 3 show the relationships between the attrition rate and mean pay, and the Civil Engineering economic efficiency index in FY 1974. If pay and attrition are associated, one would expect a strong negative correlation. If the avoidance of effort motivates attrition, a strong positive correlation should be evident. As can be seen, there are no significant relationships. More complex multi-variate analysis failed to identify any significant relationship between the attrition rate and the combination of pay and the index. Food for thought: the correlation between mean salary and the index was also not significant (0.17).

Given the high attrition rate, the logic behind pay and the avoidance of effort as motivators demand that pay and workload on the "outside" be higher and lower, respectively. The facts are to the contrary. Pay rates within Civil Engineering

Figure 2: Attrition Rate vs Mean Salary for Civil Engineering Branches—FY 1974.

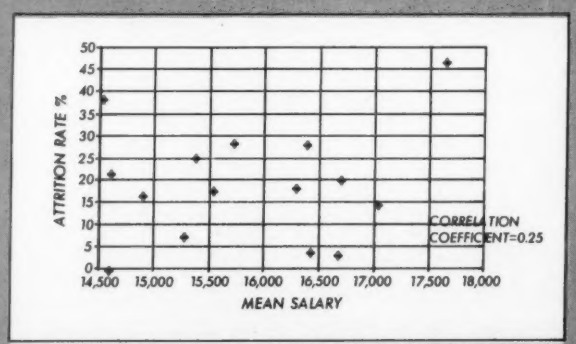
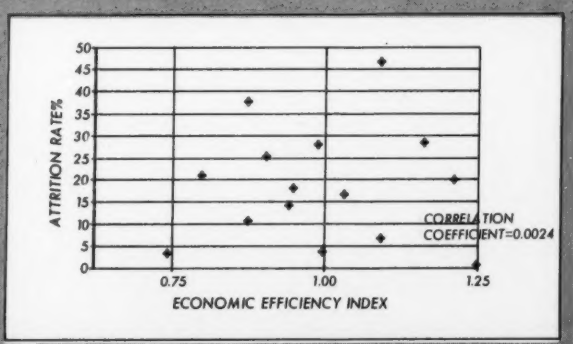


Figure 3: Attrition Rate vs Economic Efficiency Index for Civil Engineering Branches—FY 1974.



are highly comparable with the private sector, especially when the low-personal-risk nature of Civil Service employment is taken into account. I have conducted studies which indicate that pay for Coast Guard civil engineers is very close to that in private A/E firms having comparable scopes of activities. Readers doubting this are invited to review the pay and fringe benefit figures in the March 1976 issue of **Civil Engineering.** Individual workloads are harder to get a handle on. However, an analysis of a number of publications, and data developed from the Zero-Base Management (ZBM) system, suggests that workloads within Civil Engineering are generally equitable, given good management. Few civilians seem to burn the midnight oil, since overtime accounted for an average of only one percent of salaries paid in FY 1975.

Behavioral scientists seem to take a very different view of human motivation. Attrition is a form of human behavior, and all agree, in one way or another, that behavior is **caused.** People do things for reasons, although they may be subconscious, and they frequently work to the detriment of the individual. The act of quitting is the result of motivation. A knowledge of human motivation is thus central to understanding attrition.

Maslow's Theory

Of the various theories of motivation, that of Abraham Maslow seems to strike a responsive chord in many people. Maslow states that man is motivated by internally generated needs. Once a need is satisfied, it no longer motivates, and a higher need then takes its place. Maslow categorized them into his famous "hierarchy of needs."

1. Self-fulfillment
2. Ego
3. Social
4. Safety
5. Physical

The physical needs are obviously food, shelter, etc.—the minimum needs simply to stay alive. Once these are satisfied, man is motivated by physical and psychological safety, defined as freedom from injury, arbitrary behavior, unfair practice, etc. Once these are in turn satisfied, he attempts to satisfy his social needs. People generally want affiliation with others and to gain their acceptance. The word ego, somewhat tarnished, indicates a need for self-respect, self-confidence and recognition. This need seems incapable of being completely filled. Many people, unable to fill this need on the job, frequently seek to fill it elsewhere. Witness the janitor who is big man in the Moose. Man's ultimate need is for self-fulfillment, the need to reach one's full potential, to be the right man in the right place, at the right time.

Money

Where does money fit into the hierarchy? Money has two states: money as a vehicle for physical acquisition, and money as a symbol. Money can buy food and shelter. It can buy physical safety. However, as you progress up the hierarchy, physical acquisition falters in importance. Money can buy membership in the country club, but not the friendship of its members. Money cannot buy self-confidence nor self-fulfillment because they are states of mind. Money as a symbol is worthless for purchasing physical needs. Money may be a symbol of safety—the bank account seen as the barrier against the buffeting of an uncertain world. Further up the hierarchy, money as a symbol has subtle effects. It assumes whatever meaning a person wishes to attach to it. It can represent prestige, power, achievement, and for some, self-fulfillment.

Herein lies the dilemma. The complex interaction between human motivations and the dual characteristics of money makes money a chameleon. For some, money is everything all of the time, and for others money means very little at any time. Money thus has an almost irresistable attraction, sometimes, and an almost irrational impotence at others. The interaction between man and money probably has as many dimensions as there are people on the earth.

Laziness

Simple observation of the world around us belies the idea that man is inherently lazy. He has chosen to abandon the ease of the Garden of Eden for the most demanding physical environments on earth. Vast numbers of people have moved past a purely subsistence economy where the only goal is to meet physical needs. In the United States, mean family income is something in excess of twice the officially defined poverty level. Enormous efforts are expended on matters involving higher needs, such as amateur sports, charity and volunteer work, group affiliations, etc. How could these things be true if man is highly motivated to avoid effort?

What Else?

It should come as no surprise that attempts to find correlations between complex human behavior and simplistic, one-dimensional variables are greeted with failure. However, the fact that many people seem to believe that physical acquisition and the avoidance of effort are the prime motivators suggests a far different cause for attrition. Hypothesize for a moment the consequences, if management were to attempt to **act** on such false beliefs. Reducing workloads as a reward for high productivity is obviously self-defeating. By and large, Civil Engineering's control of income is limited almost entirely to a small number of superior performance awards, quality step increases, and an even smaller number of

inhouse promotions. Deceived by false beliefs and stymied in its ability to act upon them, management does nothing concerning the **management of motivation** and, in turn, is rewarded by low productivity. In response, management adopts an autocratic, directive style in which all important decisions are made high up in the chain of command. This, in turn, strikes at the ego satisfaction of the employees. The end result is a dichotomy in which management and employees operate at substantially different levels in Maslow's hierarchy. This may be manifested as a series of attitudes which make people **act** as if they are motivated only by money and the avoidance of effort and ultimately, as attrition. Unlike their military cousins, civilians can vote with their feet!

How far apart are they in Civil Engineering? It is likely that virtually all civilian employees are in the social-ego range. None are starving, and none are battling saber-tooth tigers. All occupy positions of very low personal risk and are well paid employees of the richest country in history. Money may be a motivator, but largely in its status as an emotional symbol of dignity and achievement. The motivations of civilians are thus complex, interactive and subtle, involving authority, recognition and influence over their environment. Management seems to be working at a level somewhat too low on the hierarchy. Witness the common response to questions concerning the causes of high attrition. Could it be that these attitudes are in themselves the root causes of the problem? While serving as a protem member of the Inspector General Program, I requested a summary of recent personnel actions from each branch. It was striking how few actions were taken, especially in the social-ego range. Many employees spoke of going literally years without a single good word or feedback on their performance beyond the sterile and mechanical annual performance evaluation. Half the branches visited has two or fewer actions involving formal recognition of unusual performance, good or bad, in the prior 18 months.

What Should Be Done?

All of this suggests five things:

1. That the Coast Guard must recognize the importance of its civilian employees. Seventy-five percent of Civil Engineering is composed of civilians. It follows that 75 percent of the brains and initiative are concentrated on the civilian side of the organization.

2. That management should determine the cause of each voluntary termination, being exceedingly wary of placing too much emphasis on exit interviews; they are notoriously misleading. Long term civilian attrition should be monitored as one of the symptoms of the behavioral climate of the branch. **Action** should be taken if an exodus of 20 percent is exceeded. No manager in the private sector would retain his position very long in the face of continuous high voluntary attrition.

3. That a formal and active motivational management program be maintained, involving recognition of performance beyond, plus or minus, one standard deviation from the mean. A program based on less than one standard deviation will smack of manipulation. A program based on two or greater is no program at all. Beware of any program not ultimately founded on the requirements of position descriptions!

4. That this program must aim at the appropriate level in Maslow's hierarchy, that of civilian personnel. This is likely to be in the social-ego range. The appropriate tools for such a program are recognition, trust, promotion from within, money-as-a-symbol and, especially, inclusion in the decision process. The importance of this last tool cannot be overemphasized. Autocratic management styles may be satisfactory in purely military situations. However, the preponderance of civilians, their motivational status, and the nature of the work at hand demand a more participative, professional style in Civil Engineering. How long could a Branch Chief survive if his staff did exactly as it were told, nothing less and nothing more?

5. That personnel supervising civilians examine their own philosophy and what they consider to be their own motivations. If man is inherently lazy, how can you explain your own vast strides past a purely subsistence economy? If work is nothing more than an ugly necessity and leisure is the real goal, why do so many people just like you have such a difficult emotional transition when they retire? Are you willing to accept any method of organizing your work, even to the point of puppetry, if your income rises? What was that last thing that made you really angry? Was it a matter related to your income or an affront to your social or ego satisfaction? If money is the only goal, why are you in the government business? Far higher maximum salaries are available to a small number of people in private business. Harold S. Geneen, Chairman of ITT, makes $766,085 a year. The President of the United States makes only $200,000. If your people **act** as if they were motivated only by money and the avoidance of effort, is it possible that you made them that way?

C&S

Wilford Hall Medical Center, Lackland AFB, Texas

A People Oriented Search for Excellence

A prime player in the realization of improving the quality of life for Air Force people is the Air Force Regional Civil Engineer. There is probably a greater opportunity with the AFRCE than anywhere else in the Air Force to exert a positive influence on the design of Air Force facilities.

by Gary D. Lynn, RA

"... we are in the midst of an extremely important shift in emphasis, in the perception and consideration of the critical relationships between a building and its surroundings and the people who use it or are affected by it, with emphasis on effect.

The effect can be salutary or catastrophic; it can even have a chain reaction over a large area. It can help shape or destroy anything from a neighborhood to a society. That makes architecture, correctly understood and practiced, almost frighteningly important. And it is."

Ada Louise Huxtable
The New York Times

***GARY LYNN** is an Architect in the Military Construction Division, Air Force Regional Civil Engineer, Central Region, Dallas, Texas. He earned his bachelor's degree in architecture from Kansas State University and his master's degree in architecture (urban planning) from the University of Illinois. He is a Registered Architect in Missouri and Florida.*

We too in the Air Force need to concern ourselves with good architectural design. The quality of life we provide directly affects

Commissary, Randolph AFB, Texas

the morale, productivity and overall readiness of that vital ingredient in our nation's deterrent capability—people.

In recent years, a new concern and emphasis for the quality of life for Air Force people have generated new programs and policies that have in turn placed renewed emphasis on Air Force architecture.

A prime player in the realization of this objective to improve the quality of life for people in the Air Force is the Air Force Regional Civil Engineer (AFRCE). In terms of Air Force design dollars expended, the AFRCE offices play a major role in the implementation of these new programs and policies. There is probably a greater opportunity here than anywhere else in the Air Force to exert a positive influence on the design of Air Force facilities. But along with this opportunity goes a tremendous responsibility to insure that each of our design dollars is regarded as an investment in a better man-made environment for the Air Force.

The achievement of excellence in architectural design remains a prime goal for all projects at the AFRCE, but simply setting a goal doesn't insure success. Translating the high design standards spelled out in the Air Staff policies and programs into architectural reality requires two things:

- **A clear understanding of the process necessary to obtain the goal; and**
- **A strong commitment to architectural quality by all of us who will be actively involved in the process.**

Commissary, Dyess AFB, Texas

Commissary, Little Rock AFB, Arkansas

What do we mean by good architectural design or quality architecture? Good architecture involves considerably more than simply making a facility look

nice. It must reflect the function, activities, needs and aesthetic qualities required by the ultimate facility users. Good architectural design requires a proper balance of all engineering and design disciplines. Neglect of any of the essential design elements, such as interior design, landscaping or graphics may result in bleak, harsh facilities which would have an unfavorable effect on both morale and personnel efficiency. The Air Force, therefore, does not consider good architectural design a luxury. Good design can do a lot to save energy and money over the life of our structures, and in many instances extend the life of our structures. But even when we can't measure a monetary savings, we **know** that a well designed living or working environment has a definite, positive impact on the morale, productivity and overall readiness of Air Force personnel.

Past experience has shown that good design cannot be mandated. Instead, it emerges from a process of interaction between the architect and the client (user). The quality of what emerges depends in large part on the skills and talents of the architect. But it also depends on the understanding and aspirations of the users and on their ability to clearly articulate the needs and purposes which their facility is to serve. The Air Force currently has under contract some of the most talented architectural designers in the country. We must continue to challenge and motivate these architects to provide nothing less than their best creative efforts. Imaginative, yet cost effective solutions to our complex design problems must be the norm rather than the exception.

As a Federal agency, our projects will continually be subjected to public scrutiny. Air Force architectural efforts must produce quality architectural designs which portray cost effective solutions that not only satisfy the functional needs of the users but also provide the quality of life necessary to maintain a vigorous, effective and motivated facility user. We know that the interaction between the architect and the ultimate facility user is the single most important way to influence good design. We also know that the quality of life will continue to be a major concern within the Department of Defense in the next decade.

Architects throughout the Air Force **must**, therefore, play an expanded role in the procurement of Air Force facilities which contribute rather than detract from the quality of life at our installations. This means continuing our efforts to obtain facilities which are cost effective, functional, durable, aesthetically pleasing, and most of all, responsive to the ultimate user's needs, and in effect, pursue a people oriented search for architectural excellence. E&S

AFRCEs Offer Assistance on Environmental Planning Matters

Air Force Regional Civil Engineer (AFRCE) Environmental Planning is a consultant function capable of assisting installations and major commands in dealing with state and other Federal agencies on environmental planning matters including OMB Circular A–95, Air Installation Compatible Use Zones, Coastal Zone Management, Section 208 of the Clean Water Act, and other specialized areas, such as response to pollution Notices of Violation and compliance with permitting requirements of the Clean Air Act.

AFRCEs are charged with state legislative liaison. In addition, they maintain liaison with Federal regional offices (281 of them in 22 Federal agencies) and state agencies (25 to 50 per state). They know who to contact on specific programs affecting the Air Force.

AFRCEs are the Air Force point of contact with the Army and Navy in interagency and intergovernmental matters and coordinate OMB Circular A–95 requirements affecting the three services with appropriate area wide and state clearinghouses.

What can the AFRCE do for you?

- Attend with or represent you with other Federal and state agencies as well as arrange meetings for you with these agencies.
- Coordinate your actions or information needs with Federal and state agencies.
- Provide information on current legislation, executive orders and policy directives.
- Help you resolve conflicts with Federal and state agencies.
- Advise you on how to handle various interagency or intergovernmental situations.
- Tell you where to get assistance.
- Act as your "early warning" system regarding other agency activities.
- Assist you in the environmental permit process.
- Help eliminate or minimize the learning curve your staff may encounter in addressing Environmental Planning problem areas.

Whom can you contact?

- **Eastern Region:** Mr. Bob Wong, AUTOVON 925–1110/ask for 221–6776.
- **Central Region:** Lt Col Stan Bohinc, AUTOVON 967–1101/ask for 767–2514.
- **Western Region:** Mr Phil Lammi, AUTOVON 586–4303.

Directorate of Engineering and Services

Current Emphasis

brief commentary on significant developments

ENGINEERING & SERVICES CONFERENCE HIGHLIGHTS: "A strong future in Air Force Engineering and Services lies in its people and we intend to further develop our people more for what is to come. We know where we have been and we know where we are today. Where we hope to go will be outlined in the days to come."

Maj Gen William D. Gilbert, Director of Engineering and Services, used these words to signal the start of the Engineering and Services Conference at Homestead AFB, 11-15 Dec 78. Stressing that team effort--a pulling together as a corporate team--would be the theme for the conclave, he also suggested that it should be a theme that all personnel in the career area should adopt and adhere to diligently in the year to come.

"Our people and our bases are better compared to a year ago," he said. This observation is made, he said, based on his many visits to installations worldwide during the past year. "Our people are accomplishing the job better with less resources." He added that personnel should make a concentrated effort to continue to be innovative and to use even greater knowledge in providing better support of the Air Force mission.

A host of update briefings on various management and technological programs was presented. Specific action items were addressed and they are listed here in brief detail. These items will be worked in the months to come and, if new policy develops, it will be communicated to all MAJCOMs and bases quickly. Items discussed are:

. Civilian to Military Position Conversions: This item involves Attachment 29 to AFM 26-1. When a specific civilian position at a base becomes vacant, there must be an assessment of converting the position to a military slot. This concern fits in with the need to satisfy our Readiness posture. Flexibility to permit exception by MAJCOMs will be investigated.

. New Prime BEEF Regulation: The first several chapters of a total of seven to make up the new Prime BEEF regulation, AFR 93-X, should be available to the field in the spring and the remaining chapters will follow as quickly as possible during the year.

. CB Protective Clothing: Efforts will be made to develop either through testing or by purchase from commercial sources, adequate chemical/biological protective clothing for firemen.

. Establishment of Services Squadrons: Secure and publish the authority for each Services unit at base level which meets the requirement for minimum size, etc., to become a squadron and the Chief of Services to be designated a Commander.

. SAME Ribbons: Efforts will be pursued to gain approval for the wear of the Society of American Military Engineers ribbons on the Air Force uniform.

(continued on page 21)

ON THE MOVE WITH HRO ★

HOUSING REFE

DEPARTMENT

by Eleanor R. Linder

Patricia Roberts Harris, Secretary of Housing and Urban Development said, in **Programs of HUD,** May 1978, "Housing is a fundamental, essential, and basic human right equivalent to food and clothing on the national scale of human needs; it is the foundation of the family, and the family is the basic unit of the society. This understanding alone makes the provision of decent and affordable housing an appropriate and necessary focus for national policy."

Providing decent and affordable housing for military people, who must by the very nature of military service move frequently, is especially important. Base housing can take care of only about one-third of the Air Force families, and there is usually a waiting period. Therefore, most people must find housing in the off-base community on arrival where housing is usually in short supply and expensive.

All too often a permanent change of station move results in temporary family separation or an extended stay in temporary quarters which severely strains the financial and emotional resources of the family. This is the primary reason that the Department of Defense Housing Referral Services and Equal Opportunity in Housing Programs exist. DOD has not only directed these programs, but has also provided the funds necessary to carry them out. Each base with 500 or more personnel assigned must have a Housing Referral Office (HRO) and provide complete personalized housing referral services.

To be effective however, those of us involved in these programs—commanders, civil engineers, housing managers and HRO staff—must believe that military men and women deserve the very best program and services we can provide and we must give our wholehearted support. We must add the human element, the dynamics, which make these programs come alive. We must see to it that they are not just bureaucratic exercises.

To do this, HROs must be adequately manned and the staff must be truly committed to customer service. This commitment is the key to success. It is natural to those who are convinced they have a special privilege as well as responsibility in helping the customer find the place where they will establish their home—the home which will add a measure of stability to the mobility of military life.

Every move is apt to be traumatic. All sorts of adjustments are required. Every member of the family leaves friends behind; children change schools; the car is made ready for the trip; household goods are packed and shipped; there are things to be sold and things to be bought; the climate may be extremely different. For instance, imagine a move from the Island of Guam to Loring AFB, Maine, in the middle of winter. Now think of how this trauma is compounded when the family is of a minority group—not knowing how they will be received in the community. The impact of the move on the individuals involved is obvious and generally the way they handle the challenges and hardships of the move is com-

★10 YEARS OF FAIR HOUSING

by Judi O'Brien

Over 10 years ago—in April 1968—the Civil Rights Act was enacted. Title VIII of this Act, which became known as the Federal Fair Housing Law, in the words of President Johnson, ". . . proclaims that fair housing for all—all human beings who live in this country—is now a part of the American way of life." The Fair Housing Law came 102 years after the passage of the 1866 Civil Rights Acts, which contained a provision that gave all citizens the same rights as white citizens to inherit, purchase, lease, sell, hold and convey real and personal property.

Without tracing the history of slavery and its eventual abolishment, volumes could be written about the history of discrimination that occurred from the time the 1866 act was passed until the 1968 Fair Housing Law came into existence. Direct causes of and contributing factors to the existence of discrimination would have to include the US Supreme Court decision in 1897 that established the "separate but equal" doctrine. For many decades following this decision, blacks were plagued with separate, but not always equal, accommodations in hospitals, schools and many other facilities. The Federal government itself supported this "separate but equal" doctrine in the program providing Federal financial assistance for low income housing.

At the turn of the century, many muncipalities separated the races by discriminatory zoning, which was declared unconstitutional by the US Supreme Court in 1917. After this zoning decision, the restrictive covenants came into use, which prevented designated racial, ethnic and religious minorities from living in certain residential areas. It took several court decisions and many years before the restrictive covenants regarding discrimination were laid to rest.

Even prior to the passage of the 1968 law, many private fair housing groups were organized to promote fair housing and assist minority families in obtaining housing. These private groups greatly increased in number during the 1960s. Churches and labor groups were active in supporting fair housing.

As early as 1961, 17 states had enacted fair housing legislation. Today, 39 states have fair housing laws, 22 of which have been approved by the Department of Housing and Urban Development (HUD). In addition to the prohibitions contained in the Federal law, states expand their fair housing laws to include various prohibitions such as discrimination based on marital status as well as discrimination against sightless persons accompanied by seeing eye dogs.

It wasn't until after the passage of the 1968 Civil Rights Act that the US Supreme Court, in the case of Jones versus Mayer Company, reversed a lower court decision and upheld the constitutionality of the 1866 law, stating that it was a valid exercise of the power of Congress to enforce the Thirteenth Amendment to the Constitution, the antislavery amendment.

Shortly after the enactment of

ON THE MOVE

mendable. But how does the situation affect the mission?

It is easy to understand why a person who is unable to find adequate housing, who is separated from family, has financial difficulties because of the move, or who has encountered discrimination in the search for housing, will certainly not be fully productive on the job until these situations are harmonized. In these days of shrinking manpower authorizations, the newcomer is needed on the job as quickly as possible and free from such worries—able to dedicate the full measure of thought and energy to the work at hand. Viewed in this light, we see why the Housing Referral Service is not solely to benefit the members but is also important to the mission.

The HRO support to the mission may be quantified in this way. Civil engineering cost reports show that it costs our HROs about 35 to 50 dollars, on an average, to get a person housed. If the HRO can help a member get housed and on the job only one day sooner than would have been possible without this help, the HRO is paying its way in manhours saved. Now, if the HRO can get the member on the job a week sooner, which is probably closer to our average rate of accomplishment, consider how valuable our HRO service is, not only to the member, but to the Air Force.

ELEANOR LINDER *is the Command Housing Referral Officer, DSC/Engineering and Services, Headquarters Strategic Air Command, Offutt AFB, Nebraska. She has attended extension courses at Cornell University, Solano College and the University of California and is a member of the Professional Housing Managers Association.*

In 1977, some 128,800 persons throughout the Air Force asked for help in locating off-base housing. Of these, about 114,800 acknowledged that the housing obtained was through HRO help. This included 21,277 minority members. In addition, our HROs handled over 13,600 landlord/tenant complaints and 125 housing discrimination complaints. This is an impressive record indeed, especially when we consider that it was all accomplished by less than 400 people assigned to the 172 Referral Offices around the world—an average of about two people in each office. However, we cannot afford to rest on our laurels. Our customers' needs are in many ways different than when the HROs were established 11 years ago.

Current base housing assignment policies result in more people in the higher pay grades residing off-base. More people are buying homes than ever before, more single people are living off-base, and the community housing scene has changed as well. Housing costs have reached all-time highs, creating problems for all—but most severely for people in the lower grades. Also, the Fair Housing Law and public conscience are helping to eliminate discrimination in blatant forms, but it is still going on. Housing agents who do not want minorities have learned to disguise their practices and in subtle and sophisticated ways they continue to exclude minorities. Therefore, complaints are much more difficult to investigate and validate.

Those who believe the Air Force can afford to soften emphasis on Equal Opportunity in Housing because it is no longer needed, should be enlightened by the facts. A national survey, conducted in 1978, confirmed the appalling fact that black people still encountered discrimination. It showed that if a black person looking through

(Continued on page 21)

10 YEARS OF

the Fair Housing Law, the National Association of Home Builders, the National Association of Real Estate Boards and the Council of Housing Producers indicated their support for fair housing.

Fair housing made its initial impact on military personnel when the Department of Defense directed all major Air Force bases to take a census of off-base rental housing. The census was conducted by base personnel to determine the policies of each rental facility toward military personnel. The results were broken down into five categories: open to all races; not open to all races and will not change; not open to all races but will change; not open to all races but will consider change; and refuses to discuss rental policy. Those landlords wishing to list their facilities at a military base were required to sign a non-discriminatory pledge.

In July 1967, the DOD directed that a Housing Referral Office (HRO) be established at every military installation with more than 500 personnel assigned. It was at this time that the formal listing of vacancies on a non-discriminatory basis began.

In 1968, with the enactment of the Civil Rights Act, the Housing Referral Program was strengthened. The Base Commander was given the authority to place any facilities that were not available on a totally non-

(Continued on Page 28)

JUDI O'BRIEN *is the Housing Referral Specialist, 380th Civil Engineering Squadron, Plattsburgh AFB, New York. A graduate of Albany Business College with most of her 18 year career spent in the Civil Engineering Squadron, she has held this position for the past six years.*

ON THE MOVE

newspaper advertisements for an apartment to rent or a house to purchase were to select four apartments or brokers to visit, the probability of encountering discrimination would be 75 percent in the rental market and 62 percent in the sales market. This survey was conducted by the National Committee Against Discrimination in Housing under contract with HUD. When Patricia Roberts Harris released the preliminary report on this survey on 17 April 1978, she said in part, "The scope and breadth of this national study on housing discrimination are important. The audit results are representative of the national housing markets. The study used teams of matched black and white people to measure racial discrimination at the initial visit to housing sales and rental offices. Both the nature and extent of discrimination were measured in 40 selected Standard Metropolitan Statistical Areas. Some 300 teams accomplished 3,264 usable tests. In announcing these results, we are presenting the baseline on discrimination in housing as it exists today. It is the first definitive standard by which to measure all future programs in this area."

Discrimination against other minority groups and single men and women is also widespread. Discrimination, which affects military members, is particularly unconscionable. It adversely impacts on the individuals and their co-workers and thus bears directly on unit effectiveness and combat readiness. To be proficient, the HRO staff must be particularly sensitive to the needs of all of our people on the move, both minorities and non-minorities. The HRO must have a positive rapport with the community through which non-discriminatory housing listings can be obtained. It's not enough to keep the office open everyday and welcome the customers. If there is to be any housing to offer the customers, the HRO must get out into the community and get the listings, encourage the developers to build additional housing when needed, and insure that military families with low incomes get their fair share of rental subsidies.

Housing Referral Officers have to know just about everyone in town and be a real public relations expert. They must understand the real estate and property management business, know the Fair Housing Laws and be able to "sell" reluctant landlords on voluntary compliance, be skillful investigators of discrimination complaints and mediators of landlord/tenant disputes.

This is a large order but those who are successful find great satisfaction. There is probably no other work where there is more opportunity for innovation, creativity and expression of individuality than in the HRO business. It is most certainly a worthwhile career which directly contributes to the quality of military life.

Bases which have dynamic Housing Referral Programs should be justly proud because without command support and a dedicated professional HRO staff it would not be so. Those who do not, would be well advised to find out why and get things moving in the right direction. E&S

Current Emphasis

. MCP: Eliminate the requirement to have the outyears military construction program prioritized. As a maximum, it should be the current year plus one.

. Design Reviews: More flexibility will be given to the MAJCOMs and the bases regarding designs involving family housing and commissaries. Attempts will be made to eliminate the requirement for AFRCEs to review all designs.

. Feedback on Design Matters: Establish a standard system to assure that the DCSs at MAJCOMs--and not action officers--receive feedback on design review comments. Also, in all design reviews, MAJCOMs should be asked for comments for follow-on maintenance for all projects involving new facilities and the renovation of existing facilities.

. Approvals of O&M Projects: Expiration dates will no longer be included on O&M projects approved by HQ USAF.

. Signage Programs: Policies should not be so rigid that commands cannot deviate somewhat, that is, command or unit emblems should not be forbidden outright.

. Manpower Standards: There should be a basic standard for commands to follow. Currently, there are too many additives that are common to several locations. Also, DCSs should be included early in the development stages of any standards.

WORTH NOTING

Kirtland AFB, AEDC, L. A. Maggi Win Conservation Awards

TOP LEFT: L. A. Maggi of Griffess AFB accepts Personal Award for National Conservation from General Hill. TOP RIGHT: Col Archer Durham, Base Commander, Kirtland AFB, receives Environmental Quality Award. LEFT: Col E. D. Smith, Vice Commander, AEDC, accepts Natural Resources Conservation Award.

An Air Force conservationalist and two Air Force installations received the coveted General Thomas D. White Environmental Awards during ceremonies in the Pentagon recently. General James A. Hill, Vice Chief of Staff, made the presentations.

Mr. Louis A. Maggi earned the Natural Resources Conservation Award for his outstanding contribution to Air Force natural resources conservation during 1977. Under his leadership, much of Griffiss AFB, New York, was developed for natural resources conservation and through his efforts the Base received the Secretary of Defense Natural Resources Conservation Award in 1977.

Kirtland AFB, New Mexico, was named the winner of the Environmental Quality Award. It was cited for its exceptional effort of cooperation in meeting local, state and Federal environmental standards.

Arnold Engineering Development Center (AEDC), Tennessee, received the Natural Resources Conservation Award. AEDC was recognized for its establishment of excellent public recreation access, dramatic increases in wildlife populations, improved productivity of timber and registered natural landmarks.

The awards were established in 1959 to recognize installations for outstanding efforts in fish and wildlife conservation and were broadened in 1971 to cover more general endeavors in environmental protection.

Alabama Commissary Complex, Yokota AB Store Win Rivers Award

The Alabama Commissary Complex, comprised of commissaries at Maxwell AFB, Gunter AFB and Columbus AFB, was recently named the first place winner in the L. Mendel Rivers Award competition. Selected as the best single commissary in the Air Force was Yokota AB, Japan.

The L. Mendel Rivers Award, established in honor of the late Chairman of the House Armed Services Committee, recognizes timely and economical commissary operations. This year's awards were presented at the American Logistics Association convention in Atlanta.

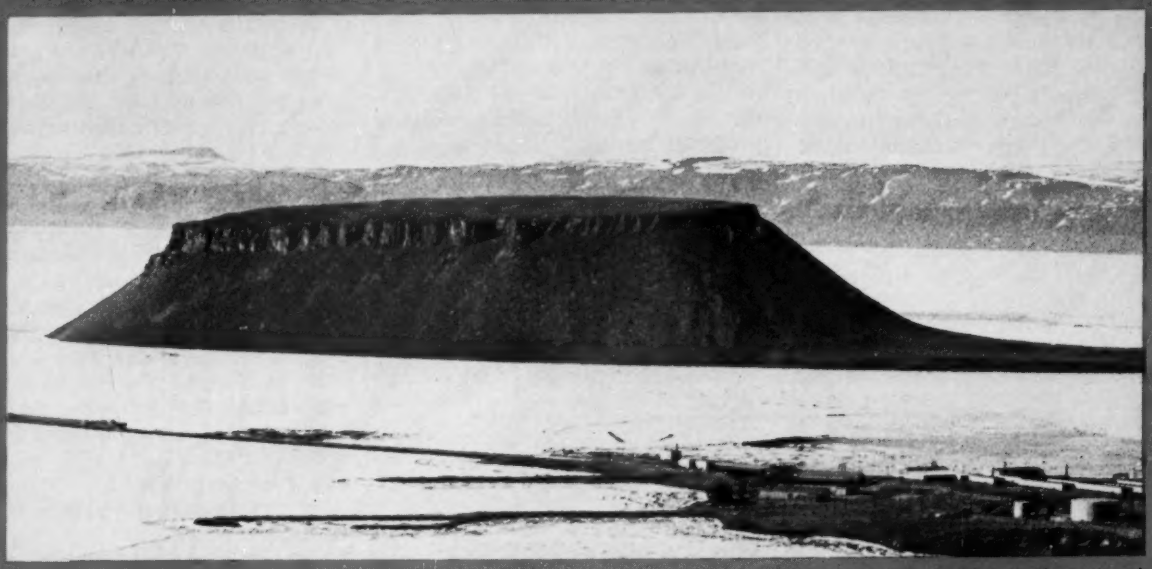
Runner-up in the Commissary Complex category was the Arizona Complex which includes commissaries at Luke AFB, Davis-Monthan AFB and Gila Bend. Second place winner in the best single commissary was Offutt AFB, Nebraska.

Tinker AFB Firemen Prove There's Still Life in the Old Pumper

Through the consolidated efforts of fire fighters at Tinker AFB, Oklahoma, an old World War II fire truck was saved from salvage and now serves to promote National Fire Prevention Week and to further public relations in the community surrounding the base.

Doomed to be condemned to Defense Property Disposal, the 1942 model American LaFrance type 57500 pumper was rescued by the fire fighters. For a period of six months and over 1,700 hours of volunteer, off-duty time, it was restored to its former glory. In fact, the pumper is registered with the original manufacturer and has been duly elected to the Classic American LaFrance Coterie, complete with a certificate of membership which hangs in the trophy case in Fire Station Number 1 at Tinker AFB.

An assignment to a remote station—for instance, Thule AB, Greenland—conjures up negative images for the selectee. When one perceives a remote assignment with reality as opposed to myth, the results can be quite interesting.



View of Mt. Dundas, Greenland, with a portion of Thule AB in the foreground.

Images: A Reflection on People Management

by Col Clark T. Price and Lt Col Arthur T. Stellmach, PE

Editor's Note: The following article contains worthwhile information for Air Force personnel who are facing upcoming remote assignments. The philosophy expounded is germane to all the other 66 tours for civil engineers and eight for services officers listed in the article "Remote Assignments Continue to Decline," published in the November 1978 issue of this publication.

The icy wind buffeted the pickup as the bundled figure emerged into the treacnerous darkness. He leaned into the 30 knot gusts, his flashlight probing the streaming snow in search of ice patches. As he approached the scene of the break, the screaming torrent of steam overrode the howling wind. The contractor's crew was already on the job. They would have to work fast to get the system back on the line so the noon meal at the dining hall could be prepared.

The call had come in at 0945 and the Mechanical Monitor had . . .

"Hold it! Hold it! I mean it's fun reading this mini-adventure in the middle of the **Air Force Engineering & Services Quarterly,** but at least get the facts straight. How could it be pitch dark at 9:45 in the morning?"

"Well my friend, let us put it this way. Welcome to Thule AB, Greenland! Welcome to the land where the summer sun shines 24 hours a day. Where the winter darkness lasts three long months. Where icebergs are calved into the sea by the magnificent mother icecap pushing relentlessly in Arctic labor. Where the . . ."

"Already already! You also have a blond behind every tree, but no trees—right? What did you foul up so bad they sent you to Thule?"

The negative image portrayed above is unfortunately one that most people in the Air Force have about Thule AB. It is a bad image that needlessly costs the Air Force countless thousands of dollars each year. In one recent attempt to find a replacement for one of the civil engineer contract monitors, two senior noncommissioned officers retired rather than accept a Thule assignment. Tragically, it is not an uncommon event. In most cases, the contract monitor positions are one-deep and manned by mature, higher ranking enlisted personnel.

Because of this grade structure, many of those selected for a Thule assignment have sufficient longevity to retire. The loss of these experienced personnel ultimately degrades the overall mission capability of the Air Force.

This loss could be minimized if the rewards of an assignment to Thule AB were as well known as the perception of its less enviable qualities. Thus, the initial objective of this article is to acquaint the reader with some reality versus the myth of a Thule assignment, and hand in hand with that, to elaborate on our approach to the image problem.

Interestingly enough, as the problem of unit image was investigated, it became apparent that a broader principle existed with a related application to people management. Simply stated, **a unit's image is the product of what is known of its mission, performance and appearance.**

Going one step further, **the performance and appearance of a unit and the motivation of its individuals is directly affected by the quality of people management.** Therefore, a unit's image, if all the facts are known, should reflect how well the job of people management is being accomplished. Unfortunately, when viewed from afar, one factor can outweigh the others, such as with Thule AB where the "picture" of ice, cold and howling winds predominates.

The problem of a negative image is not confined to Thule AB nor to other bases with "known reputations." The problem can exist within an individual section in an otherwise top-notch organization or base. More important than **where** an image problem exists is the **impact** of that image. While this article is not intended to be an in-depth study in psychology, is it not possible that Drucker's theory of the "Self-Fulfilling Prophecy" is applicable to entire organizations as well as individuals?

If, as a result of poor people management, the individuals within a group feel that they are a part of a "sad-sack outfit" it is unlikely that they will have pride in their unit. Lacking that pride, it should not be unexpected that these individuals will perform less professionally than they are capable of. Given a preponderance of this type of individual within the unit, the unit performance as a whole will suffer, thus fulfilling the prophecy that the group is and will be "sad-sack."

Conversely, it is very probable that a **positive unit image** elicits greater than normal efforts from the individuals in the group. In the well-known Hawthorne experiments, the test group's productivity increased when better lighting was installed. When the lighting was replaced with the original lighting, productivity increased even more. While this phenomenon was eventually attributed to the employees' response to management's interest, it would seem natural that the test group underwent a change for the better in its self-image. With the higher positive image, the individuals undoubtedly **wanted** to excel. While this is obviously conjecture at this point, the theory of an organizational image affecting individual performance seems to fit in both a postitive and negative sense.

Notwithstanding the self-supporting momentum of a good or bad image, the image of a unit can be altered for better or worse by the quality of management. An assessment of a unit's image should indicate how well people management is being done.

Perhaps the most obvious characteristic of a good image is spirit. Notice the enthusiasm of each person as they do their jobs, how they greet visitors into their sections and try to be of assistance. If you have a group of smiling, helping individuals with a "can-do" attitude, chances are your image is fine. Pride and appearance are two more clues. Is work completed on time with good craftsmanship? Are job sites cleaned up? Are letters and reports error-free? In other words, do people take pride in their work? Do they take pride in themselves and how they look?

There are many other factors that could be observed and measured such as job knowledge, timeliness, etc. The point is that these indicators should allow you to assess your group's self-image. If the indicators point to a negative image, you may have a "people management" problem, a problem which will undoubtedly affect overall productivity and may affect how well your unit can meet and uphold its mission.

What to do about it? Well, there are many things that can be done to turn around a

COLONEL PRICE *is Commander, 12th Missile Warning Group, Thule Air Base, Greenland. He has a bachelor's degree in management information systems from Colorado State University.*

COLONEL STELLMACH *is Director, Civil Engineering, 12th Missile Warning Group, Thule Air Base, Greenland. He holds a bachelor's and master's degree in industrial engineering from the University of Illinois and is a registered Professional Engineer in Ohio.*

negative image. Countless books have been written and courses given on how to be a better manager. This is a key point since it is often the commander or section chief who by his or her actions or inactions, sets the tone of the group.

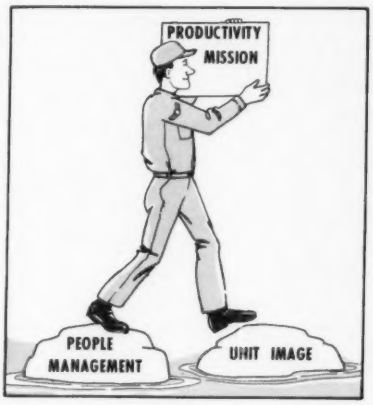
By now, you should be saying if you haven't already, that all this is nothing new. You are right—it has all been thought of before. In fact, whole "programs" have been implemented to address the various facets of "people management." Remember "Zero Defects?" How about current **AFR 35-10** standards—or the whole range of programs for military decorations, cash awards, intramural sports, squadron patches and hats, on almost ad infinitum?

All of these programs aim to develop either personal or group pride and motivation, and are valid ingredients in "people management." Good leadership includes the judicious use of these programs to be sure. But when was the last time you simply said "Thank you, that was a job well done." How often we overlook the real essence of people management in our haste to implement people "programs."

It is the essence of people management, the personal interest, the concern for an individual's well-being, which we try to practice at Thule AB. We recognize that most newly arrived personnel probably have a limited knowledge and perhaps a bad image of Thule. Our initial and immediate task is to supplant that image with one founded on the reality of who we are, what we do and how we live.

A number of programs seem to be working quite well. They start with a welcome by the Base Commander, members of his staff and personnel of the newcomers section greeting people as they arrive at the air terminal. The Sponsor Program is, of course, an important aspect at Thule AB, with letters, prearranged quarters and personal assistance in clearing-in. At frequently scheduled Newcomer Briefings, the new arrivals are made aware of Thule's prime mission, the support of the Ballistic Missile Early Warning System and its vital role in protecting our country and those of the free world.

In his new duty section, details of the job are explained and the "newbie" is shown around the base and introduced to key contacts. In short, the newcomer to Thule AB is given immediate recognition that he is an important member of the team. That initial treatment, together with the use of training programs, Commanders Calls and other management tools, appears to work well.



There is always room for improvement, but the unit image most personnel have at Thule AB is positive. Morale is generally high and motivation good. While we would like to believe that these results are solely attributable to good people management, it is undoubtedly the assignment itself and the Thule area that play a major role.

Some of Thule's more spectacular activities occur during the summer months when Special Services runs bus tours to such places as Dundas Village (site of the original Greenlandic Eskimo settlement at Thule), the Greenland icecap and the nearby Camp Tuto "ghost town" (base camp of Camp Century—City Under the Ice). Hiking out to the face of the Sermerssuaq Glacier where tremendous icebergs are born or "inner-tubing" down the miles-long slopes of the icecap are but two more of the many exhilarating summer-time adventures. Photographers can go absolutely "bonkers" trying to capture the spectacular panoramas, Arctic wildlife and colorful "desert" flowers.

Special events include riding an authentic dog sled in the Annual Armed Forces Day celebration where Eskimos from 60 to 70 miles around come to race for valuable prizes. Also a highlight is the annual Dundas Open Golf Tournament played on top of the landmark Dundas mountain plateau. It is a nine hole, single club, tee the ball on Astroturf marathon, where 90 percent of the fun is getting there and coming back.

Opportunities abound during off-duty time to learn new hobbies, to participate in various sport activities (Have you ever played baseball at midnight on an unlighted field?) or just relax at the Rec Center or Club. These and other popular activities make a Thule AB assignment an unforgettable once-in-a-lifetime experience. Even the Arctic environment, while certainly to be respected, adds yet another unique facet to marvel at and enjoy.

The newcomer to Thule AB generally responds quite rapidly to these fascinating attractions. Newfound friends seem friendlier in the close-knit Thule family. Preconceived images evaporate in the clear Arctic air.

Unfortunately, the turnaround of approximately 200 bluesuiters a year is not sufficient to bring the positive word of Thule AB back to the Air Force. But, the Air Force-wide negative image will be conquered. This article is a start. **E&S**

Chalk Talk

...a synopsis of academic activity to assist personnel

TECHNICAL OBSOLESCENCE--Do you realize that engineering is one of the professions wherein technical obsolescence can occur very rapidly? If you haven't taken specific action to UPDATE your engineering knowledge in the past five years, as much as half of your engineering expertise may be obsolete. What plans do you have to keep yourself current?

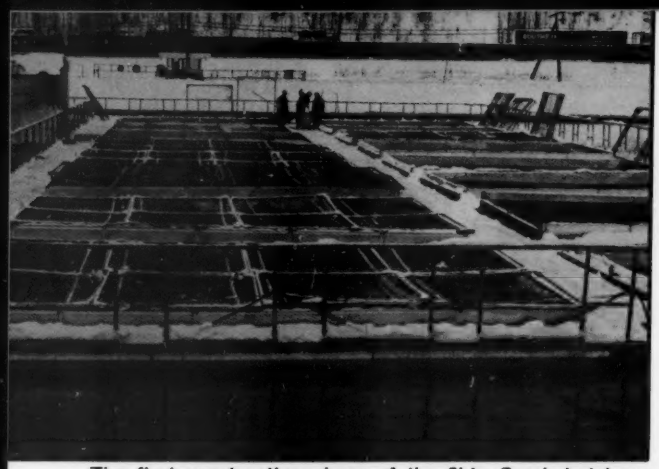
PERSONAL OBSOLESCENCE--Along these same lines, the January 1979 issue of Changing Times reports that "...the newest master's degree in business administration will self-destruct in eight years." It goes on to say that the antidote is continuing education. Are you convinced?

COURSE QUOTAS--Selection of personnel to attend courses at the AFIT Civil Engineering School (CES) is done at base and MAJCOM level, usually well in advance of the course date. The CES reviews student qualifications to determine whether he or she is academically prepared to take the course, but this action is taken promptly upon receipt of the application. If you are experiencing late notifications of students to attend courses, make that fact known to your MAJCOM representative.

ON-SITE SEMINARS--There have been far more requests than the CES can honor and requesters are being asked to look again at their needs, especially in those situations where several on-site seminars are requested in the same letter. The School will continue to perform as many seminars as possible and all bases are asked to submit requests for all their firm requirements in the current fiscal year.

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES--The 1978 edition of the Manual On Uniform Traffic Control Devices (MUTCD) is now available. Copies may be obtained at your Government Printing Office bookstore or by mail to: Superintendent of Documents, Government Printing Office, Washington DC 20402. Cost for the manual is $18.00. Enclose remittance if it is ordered by mail. The MUTCD is published in a loose-leaf binder. The cost of the new manual includes a subscription for future changes.

STATUS OF SEQUENTIAL RESIDENT COURSE SCHEDULING--This fiscal year, the CES instituted limited sequential course scheduling. Starting with the Base Civil Engineering Course on 8 January, students can stay on for any one of the seven different technical applications courses. Sequential courses can start with any of the technical courses listed in our continuing education catalog. To date, only six students have taken advantage of this schedule. Future opportunities exist in April and July 1979. If appropriate to your needs and consistent with your educational plans, use these opportunities.



The first construction phase of the Ship Creek hatchery located on Elmendorf AFB, Alaska.

Floating pens in the power plant cooling pond are used to hold brood stock, especially rainbow trout.

An official displays one of the rainbow trout being held in brood stock.

It's taken 15 years of determination and cooperation between Elmendorf AFB and State of Alaska officials to realize success in the construction of a major fish hatchery on the base. It's . . .

A WHALE of a Fish Story

A rainbow trout breaks water in the new hatchery located on Elmendorf.

by Maj Charles D. Mosbruger

Although Elmendorf AFB, Alaska has a proud history of natural resources conservation, a significant Air Force contribution to the natural resources program involved granting use of Air Force real estate and power plant cooling water to the State of Alaska for constructing a major fish hatchery in 1977. The story of the hatchery is a narrative of cooperation between Air Force and State of Alaska officials. The sequence of events demonstrates how determination and a spirit of cooperation overcame obstacles which easily could have stopped this project.

The initative for the Elmendorf AFB hatchery came in 1960. The Base Wildlife Conservation Committee, looking for a source of fish for stocking the base lakes, studied the possibilities of raising fish in the power plant cooling pond. By 1963 the Committee, working with the Alaska Department of Fish and Game (ADFG), completed preliminary investigations and decided to proceed with the concept. ADFG suggested as a first step that the base purchase three 25 foot diameter tanks similar to those in use at various state hatcheries. In September 1965 these tanks were installed, supplied with water from the base cooling pond, and stocked with rainbow trout. This was an Air Force operation, raising fish to be stocked in the various lakes on base.

Tne Air Force permitted AD-

FG to use these same tanks during the summer months to hold king (chinook) and silver (coho) salmon. After spawning, the eggs from these fish were transferred to the State of Alaska's Fire Lake hatchery. During this period, both Air Force and ADFG personnel became convinced that using the warm water discharge from the Elmendorf AFB power plant to support a State hatchery would benefit both parties. Elmendorf AFB was concerned about thermal pollution of Ship Creek as the home for five species of salmon and two species of trout. At the same time, ADFG recognized a growing need for a centrally located hatchery with a readily available source of heated water. Using the power plant waste water discharge would abate the Elmendorf concern and satisfy ADFG requirements.

Informal agreements led to the next development wherein ADFG placed over 90,000 coho salmon directly in the cooling pond in 1972. This immediately created an unforeseen problem because the fish were drawn into the power plant's supply line, clogging the screens and disrupting the cooling water supply. Despite this temporary setback, studies confirmed the benefits to be derived from a State-operated hatchery. In 1973 the base turned the cooling pond over to the ADFG to raise rainbow trout brood stock. These trout gave the State a source of eggs for use in its other hatcheries.

MAJOR MOSBRUGER *is Deputy Chief, Operations Branch, 21st Civil Engineering Squadron, Elmendorf AFB, Alaska. He received a bachelor's degree in aeronautical engineering, from Rensselaer Polytechnic Institute and his master's degree in astronautics from the Air Force Institute of Technology.*

Throughout 1974, State and base officials pursued two objectives. The first, short term objective allowed continued State use of the cooling pond. The State constructed a series of floating pens to reduce the possibility of fish interfering with the power plant water supply. The second, more significant object was a cooperative agreement for constructing a new State hatchery on Elmendorf AFB, supported by a $3 million State capital improvement project. The agreement ran into a series of delays while base and State officials resolved gray areas involving environmental impacts, thermal pollution responsibilities, water control operations, Air Force mission requirements, and so on. Through close coordination, all obstacles were cleared, and in December 1975, Headquarters US Air Force gave its approval for a 25 year lease of the proposed construction area. In February 1976, the ADFG Commissioner and the Elmendorf AFB Base Commander signed the formal cooperative agreement which opened the way for the new hatchery.

The first construction phase, costing $2.3 million, was completed in November 1977. The first fish were stocked on the first of December that same year. As of this writing, the hatchery is holding 8,000 rainbow trout (the current brood stock), 120,000 rainbow fingerlings and 570,000 silver salmon fingerlings. Although the largest percentage of the fish raised on Elmendorf AFB are programmed to stock the popular Kenai Peninsula recreation area, some rainbow trout are to be used in the interior of Alaska.

Although the story of the Elmendorf AFB hatchery has not concluded, the progress thus far is both interesting and a tribute to the individuals who for 15 years have been working for the success of this program. It is anticipated that continued cooperation and determination will achieve maximum use of our public resources. E&S

10 YEARS OF

(Continued from Page 21)

discriminatory basis on restrictive sanction. Military personnel were prohibited from entering into any rental, lease or purchase agreement or from moving into any facility in which the agent or owner practices discrimination.

Although Housing Referral has undergone several changes during these years, the daily operation remains basically the same. HROs list rentals and sales throughout the area on a non-discriminatory basis, and military personnel are processed through the office, briefed on the area, available housing, and their reponsibilities as tenants in the local community. Military personnel are also briefed on the "Equal Opportunity in Housing Program" and are requested to notify the HRO if they feel that they have encountered discrimination while seeking housing. In addition, HROs provide their customers with information on the surrounding area, appropriate rental laws, as well as a mediation service for military tenants with landlord problems they cannot resolve themselves. This mediation service is also extended to landlords listed with the HRO who are having problems with military tenants.

While the original Housing Referral concept came about because of military minorities encountering racial prejudice in obtaining housing near military installations, the term discrimination no longer deals with race alone; it also includes color, creed, national origin and sex. The prohibitions relate to the sale, rental or occupancy of housing, as well as prohibiting discriminatory lending practices and discriminatory practices in

(Continued on Page 34)

In attempts to spread the quality of life philosophy throughout the military community in USAFE, Services personnel have resorted to a unique communications plan. It's an example of getting results by going to top leadership.

People Programs: Getting the Word Out

by Capt Susan A. Christensen and Capt John L. Leppert

It was the "Year of the Soldier" throughout Europe last year. Every communications medium was used to promote the benefits of military life, with the objective of instilling pride in the fact that the military takes care of its own. Emphasis was placed on making people aware of the numerous programs developed to make the military more responsive to their needs.

While the "Year of the Soldier" was one way the Army drew attention to its people-oriented programs, the Air Force has had a long history of such programs. Within Engineering and Services at Headquarters US Air Forces in Europe (USAFE), engineers and services people are tasked daily to meet the unique and varied needs of a complex and ever-changing military community. To fortify this fact, the Chief of Services and the Base Civil Engineering officer need only to look at his or her present operation and compare it to the previous year. But because of limited resources, it has become a real challenge to offer continuously improved service to our patrons. Equally as challenging is getting the word out, motivating people, and educating them with what we can and want to do for them.

An effective means to spread the quality of life philosophy throughout the command is a 9 day long Commanders Seminar held twice monthly by USAFE at Ramstein AB, Germany. This Seminar for new commanders includes a briefing on Services and Consumer Advocacy. Instead of long lists of facts and figures, we in Services concentrate on an informal discussion of people programs and our efforts to improve the quality of life for our military community. Our aim is to inform commanders about our various activities and to show them how they can better meet the needs of their personnel by working closely with their respective Base Services personnel.

Morale on USAFE bases is a critical concern and Food Service plays an obvious part in how high or low it is. Commander interest and support of Food Service is, therefore, essential to the welfare of an installation. An effective tool available to the commander is the Base Menu Planning Board. Its monthly meetings are open to all interested individuals. Commanders are urged to encourage dining hall patrons to participate in these meetings and make suggestions on how service can be improved.

Since the primary mission of the dining hall is to feed meal card holders, we ask commanders to insure that separate ration personnel and dependents do not task the dining halls beyond their capacity. We urge commanders to periodically check the following areas:

- **How are funds deposited with finance and by whom? Are cross-checks established?**
- **Sanitation/maintenance of facility and equipment; replacement/repair.**
- **Are Food Service personnel recognized and rewarded when their efforts warrant?**
- **Are hours of operation convenient for the majority?**
- **Are the quality and variety of food for weekend and midnight meals comparable with the weekly menu?**

These remarks are intended to show the commanders how their involvement helps to insure a responsive Food Service operation. We encourage them to frequently eat in their base dining facility—not just the noon meal or when specialty meals are issued, but on the

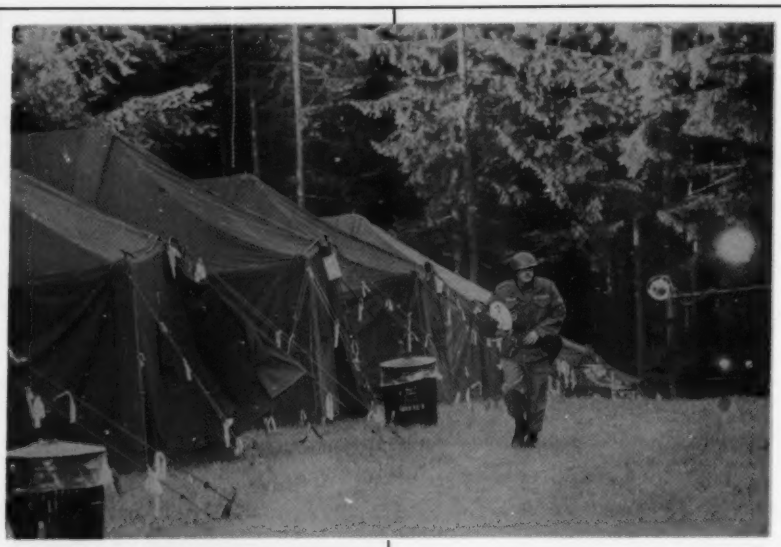
CAPTAIN CHRISTENSEN *is Chief of Bachelor and Transient Housing at Headquarters United Air Forces in Europe, Ramstein AB, Germany. She was formerly Chief of Services, Andrews AFB, Maryland.*

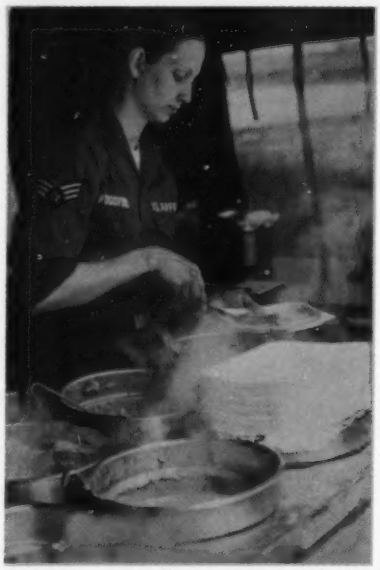
CAPTAIN LEPPERT *is a Contingency/Exercise Officer on the USAFE European Air Combat Operations Staff, Deputy Director of Engineering and Services, Force Development Division, Ramstein AB, Germany.*

weekends and at the midnight meal. This is the best way to learn how well Services personnel are doing their jobs, and that this kind of involvement by the Commanders assists Services personnel in improving their operations.

The Mortuary Affairs Program is the most sensitive and least understood of all Services areas. First, it is difficult for individuals to talk about death and dying. Second, when a death occurs in a family, survivors are generally unaware of their mortuary benefits. Because of these facts, we urge commanders to periodically schedule a Mortuary Affairs briefing during their commanders calls. The Services Officer, in conjunction with Personal Affairs, is available for such briefings. Military personnel are guilty of a disservice to their families by not knowing their entitlements and by not discussing entitlements with their next of kin. So often, unscrupulous individuals take advantage of those who have experienced a death in the family. Commanders can keep this to a minimum if they are well informed and keep their subordinates knowledgeable.

Another aspect of the Mortuary Affairs program discussed is the search and recovery teams required at USAFE bases. We have learned that there is more to search and recovery operations than just teaching team members about procedures. Since team members do not have the opportunity to experience their feelings on death before participating in a search and recovery effort, we know we are not preparing them for the emotional trauma of their duties. We advise that many bases work with their local hospitals and chaplains in developing a training program for team members which includes seminars on death and dying. Commanders are encouraged to insure that their bases have such training and that team members are carefully chosen.





"Hilton" Tent City—Field exercises are held periodically to train and maintain the readiness of USAFE personnel. whose living quarters are the billets shown above. At the left, three hot meals are served daily from the field kitchen.

In the area of Base Exchange and Commissary support, we stress the value of the Exchange Advisory Council and Commissary Selection Board. Often combined, these councils serve as a vehicle to disseminate new information on policies, procedures and special events and to generate feedback from base representatives on how well their needs are being met. Since each council is composed of representatives from various clubs and base organizations, they can reflect a good cross-section of the community. These councils are less effective, however, if the information from them is not disseminated to those they represent. Commanders calls are an ideal way to inform personnel on how we are striving to improve service and customer satisfaction.

Commanders are requested to brief their people that they should never leave any service facility without trying to resolve any dissatisfactions. When the Exchange boasts "satisfaction guaranteed or your money cheerfully refunded," it means just that. Management is available at each facility and should be approached. If it is unresponsive, the Chief of Services should be given an opportunity to resolve the problem. Commissary and Exchange management is as interested in hearing about good service as it is about areas within a facility which need attention. That is one reason why there is a customer suggestion box in each facility.

The draft **AFR 90-9** states,

"Bachelor and transient quarters should meet basic physiological needs and provide the space, privacy and furnishings required for comfortable living." This is a popular discussion item with commanders. We urge them to obtain a copy of the newly published **AFR 140-1** which describes how a Quarters Improvement Council should be set up and managed. An effective Council can be one of the best tools a commander has to upgrade the dormitories and food facilities his people frequent. We brief the new commanders to become closely involved with this Council to insure that its decisions reflect the best interests of base personnel.

At times, the bases we have visited have approved dormitory upgrade programs based on a piecemeal approach. The result is new furnishings, carpets and drapes spread throughout the dormitories in a haphazard manner. Often there was no base plan detailing how furnishings should be allocated or replaced, or buildings upgraded. As our resources become more and more limited, the bases, through their Chiefs of Services and Squadron Commanders, have been encouraged to develop credible furnishings management and upgrade programs.

In billeting, our goal is to provide patrons with the level of service they have come to expect from a civilian hotel or motel. This is indeed a challenge. We urge commanders to familiarize themselves with what transient facilities are available for their incoming and outgoing PCS personnel. Frequently, the demand for space is greater than the supply. Their understanding of what is available through the Base Billeting Office and the correct procedures to secure its use can ease some of the irritants personnel experience.

Most of our briefing is spent discussing the more orthodox things we do in Engineering and Services. However, one of the best examples of how we are committed to giving USAFE people the best service available is our exercise support. We conclude our briefing by running through a typical field exercise. Since each has its own unique characteristic, we deal in general principles. This gives commanders a broader perspective from which to judge how effective we are in meeting the needs of exercise participants. They are told how exercises play a continuing role in training and maintaining the readiness of our personnel by providing an opportunity to develop and perfect important skills. Not all exercises find people living in tents and eating out of field kitchens. In some exercises, the host nation may provide quarters and dining with only minimal augmentation by USAFE Engineering and Services personnel. Other times, contract quarters and dining may be used. Various combinations of the above have also been used to support exercises.

Civil engineering support of exercises, except in the case of tent city, is mainly crash rescue/firefighting and aircraft arresting barrier installation and operation. If a field kitchen is required, then engineering personnel are required to hook up power, operate and maintain generators and other equipment essential to the field kitchen. With limited spare parts and tool kits, they must keep the equipment running so food service personnel can feed exercise participants.

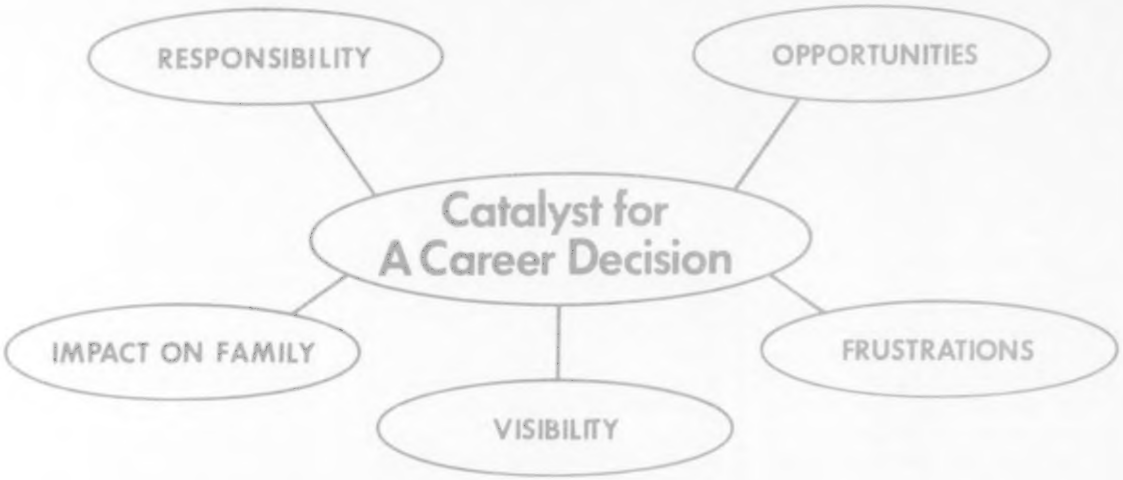
The Food Service personnel have a difficult task. Without much of the kitchen equipment normally found in a dining hall, they are expected to prepare culinary delights for the hungry troops—and they do. Using a mixture of fresh, frozen and dehydrated food, cooks turn out meals that rival the best that can be prepared in a fully equipped dining hall.

Once people have a place to sleep and appetizing food to eat, what else can be done in the exercise environment? The Army and Air Force Exchange Service (AAFES) is ready to provide health and comfort items as well as other goods normally found in local base exchanges. Depending on the location and facilities available, a mini-exchange will be set up along with a fast food operation or mobile food truck. When required, AAFES provides a laundry concessionaire with same day service or washers for the troops to launder their own. Free 16 mm movies are provided, with beverages available at the Exchange outlet. Depending on the locale, concessionaries from the community are brought in to tempt personnel with local bargains—from oil paintings to bedspreads. All are offered at prices aimed at generating a fair profit for the military welfare fund while satisfying the innate urge to find bargains.

While an exercise means long hours of work and less than ideal living conditions, Engineering and Services personnel provide many of the things that make an exercise better. However, exercises are only one aspect of Air Force life in the overseas environment. We recognize that our people spend most of their tours at their permanent duty stations pursuing their normal duties. Therefore, we concentrate on the "people programs" within Engineering and Services and we also give commanders some insight into our own limitations and frustrations. By working closely with their Services personnel, commanders can achieve their objectives. The net result is that the Base Services officer has gained an ally and the effectiveness of his efforts to improve the quality of life for the military community has increased tremendously. E&S

There are pluses and there are minuses in every job. The bottom line is, a job is what you make it. Here are some frank observations about a . . .

MAJCOM Assignment:



by Capt Felix Uhlik, PE

Have you, a Civil Engineering Junior Officer, ever wondered what a major command (MAJCOM) assignment is all about? If you are curious, or if you would like to compare notes about a current or previous tour, perhaps the following candid opinions and perceptions will be of interest to you. They were developed over a three year tour at Headquarters Strategic Air Command/Engineering and Services, and the frank evaluation may reveal some key points which can make a MAJCOM tour a decisive factor in determining your future career path.

My attempt is not to "preach" the attributes nor to "bad mouth" the shortcomings of my particular tour; rather, it is a sincere analysis of job responsibility and visibility, opportunities, impact on family, and frustrations. Although a certain amount of bias is unavoidable and certain opinions may not be shared by others, the salient points should be evident.

RESPONSIBILITY

Of the many reasons offered on why a MAJCOM tour is a career asset, job responsibility is often mentioned. It cannot be gauged in terms of the number of people supervised (junior officer positions are non-supervisory within SAC/DE) but rather by the breadth of your job and its interaction with the overall DE mission. Admittedly, jobs are available where you are responsible for multimillion dollar projects, programs or facilities; but for the most part, you are assigned as a staff officer to monitor a specific chunk of a large program or project. For instance, at HQ SAC a major and two junior officers manage the $75 million plus Weapons Systems Security Improvement program. Most of the work involves coordination with other staff agencies (primarily security police and logistics), other MAJCOMs, the Air Force Regional Civil Engineering Offices, the Army Corps of Engineers, and the Navy Facilities Engineering Command. Fortunately, due to the nature of a headquarters function, there are a minimum of additional duties (as compared to base level) to be distributed among junior officers.

The responsibilities inherent in any MAJCOM job fall into two general categories which correspond with the functions of a headquarters:

- **Staff support,** which entails keeping the DE and the

MAJCOM commanders informed, responding to inquiries, and preparing various reports and studies; and,

• **Base Assistance,** which involves providing guidance and assistance to bases and reporting units.

These responsibilities require direct, written and oral contact with the Base Civil Engineering organizations. It is difficult to determine which of the two responsibilities is more important or time consuming since the blend of the two differs with each job.

VISIBILITY

Another factor which differs among junior officers' positions is "visibility." Perhaps no other word is as overused as visibility or "High Vis" when discussing the merits of various jobs within the staff among both senior and contemporary officers. Aside from the dictionary definition, visibility is often what differentiates one officer from another. Performance is, of course, expected from each individual. While sometimes a by-product of job performance, visibility is often accrued through benefit of position rather than demonstrated ability (being involved with programs receiving current interest, such as readiness or energy, is an important factor). The old truism of "being in the right place at the right time" is still a winning combination.

Visibility, incidentally, is a variable which can be controlled somewhat by the individual. The extent of control depends upon the individual's goals and personality. (In effect, "the meek shall inherit the earth," but they may never make 0-4.) At any rate, raising your hand to volunteer, even considering the extra load, usually pays off in the long run. The onus is on the individual to pursue his career goals in consonance with his or her conscience and value system. Being able to impress your superiors is important and the ability of one individual to glow while another just performs is usually perceived as a differentiating factor in performance ratings. Right or wrong, a strong emphasis on visibility exists at the MAJCOM level and to be forewarned is to be forearmed. Nevertheless, the opportunities definitely exist for personnel to make their mark at a MAJCOM.

OPPORTUNITIES

As in the discussion on responsibilities, the range of opportunities available is broad. If TDY appeals to you, an assignment to the CESMAT (Civil Engineering and Services Management Analysis Team) should satisfy your yearning for travel. Some people prefer special projects as opposed to routine duties. These projects (many of them "High Vis") frequently arise but one usually needs to make his intentions known to become a project officer. These special jobs can range from planning a farewell luncheon for a fellow office worker to managing a several hundred thousand dollar renovation project within the headquarters building.

Frequent contact with Headquarters US Air Force, the Air Force Engineering and Services Center, other MAJCOMs and even other services and Governmental agencies is likely to occur. These experiences are valuable assets to better understanding the Air Force mission and the role you play in supporting it. The resulting perspective can be one of the most important benefits with which you can determine your future career goals. You will also become more familiar with the jobs available throughout the Air Force and, specifically, in the 55XX career field. It is a good assignment to actively participate in programs and policies which affect all the bases within the command. You, as project officer, can identify problems and recommend solutions within your area(s) of interest and responsibility.

Promotion opportunity at the MAJCOM level has historically been above average and the assignment does have a positive impact on your records in that it shows another level of experience breadth. As might be expected, pursuit of these opportunities does not come without a price and other members of your family may be affected by your tour.

IMPACT ON FAMILY

The challenges which come with the MAJCOM assignment can also create problems at home. The TDY which may be attractive to the unattached individual can play havoc with a family composed of small children, pets, household chores, and an irate spouse trying to keep track of it all. Even if TDY is not involved, overtime is a common occurrence and often preempts planned family activities for the weekend. These conditions tend to be cumulative over a normal three to four year tour and, though not unique to MAJCOMs, are, at best, a source of irritation which must be endured.

Socially, a MAJCOM assignment can be a rewarding experience. In addition to the typical functions such as dinings/in/out, found at base level, there are numerous headquarters sponsored social affairs throughout the year which provide ample opportunity for enjoying an evening out. An annual spring formal, Christmas party, costume party (Fasching), and picnic are examples of functions held for Engineering and Services personnel at HQ SAC.

When the individual directorate and office functions are added, along with private engagements, the social calendar can get quite heavy—and your wallet or pocketbook quite empty! Although there is no mandatory attendance requirement, it is generally recognized that participation in social activities is related to the "whole man concept" and, hence, beneficial to your career.

FRUSTRATIONS

A common initial reaction to a headquarters tour is something akin to cultural shock. After leaving base level, you are suddenly thrust into a completely different work environment. Instead of being a base-level division or possibly branch chief who is a supervisor and decision maker, you are a staff support officer—one who supervises his desk and phone and decides which suspense slip to chase down. You become keenly aware of the organizational chain of command and find yourself far removed from the decision-making level. Bewilderment may lead to frustration as you become accustomed to the work routine.

Repetitive paperwork and the coordination required to get it out can sometimes seem to get the best of us. Since part of the MAJCOM function is to provide guidance to base units, all correspondence has to be fully coordinated before it is dispatched. Usually, somewhere along the way, changes are recommended, errors are detected or nonconcurrence is received. Any of these happenings can cause a rewrite with additional delays due to the typing, proofreading and recoordinating. Even if correspondence is hand-carried, it may take several days of rather unproductive time to get out your paperwork. If an item requires Command Section coordination or signature, the processing time and effort increases tremendously since several additional levels must review the document before it reaches a General's desk. Then, there is always the possibility that your letter or message becomes "OBE"—Overtaken by Events—in which case several hours or days of effort become totally wasted.

Another area of concern can be summed up with three letters: OER. Although competition for top-block ratings occurs at all levels, most junior officers agree that the going gets tougher at MAJCOM level since most personnel are screened and selected for the assignment based upon demonstrated ability. An internal relocation or job swap may help and often junior officers are rotated between jobs to increase their experience levels and even out the "visibility" factor.

In deciding whether or not you want a MAJCOM tour, be sure to consider your experience, education level, professional registration desires, attitude and career goals. Talk to fellow officers assigned to headquarters and use their assessments in your decision process. A MAJCOM tour, like any other one, is what you make of it. If, after evaluating your personal situation, the idea of a MAJCOM assignment appeals to you—make every effort to get to a headquarters. It probably won't be easy and you may have second thoughts after getting there; but in the long run, you will benefit from the tour. In retrospect, a headquarters tour can't insure that you will make 0-6, but it can make you decide if you're willing to hang in there!

E&S

CAPTAIN UHLIK *is assigned to the Directorate of Engineering and Construction, Headquarters Strategic Air Command, Offutt AFB, Nebraska. He holds a bachelor's degree in civil engineering from the New Jersey Institute of Technology and a master's degree in civil engineering/facilities from the Air Force Institute of Technology. He is a registered Professional Engineer in Ohio and a member of several professional fraternities.*

10 YEARS OF

(Continued from Page 28)

real estate broker organizations and multiple listing services. Even discriminatory advertising is prohibited.

The Federal "Fair Housing" law gives HUD the authority to receive, investigate and conciliate complaints and make provisions for the enforcement by the Attorney General. All discrimination complaints handled by the Air Force are normally sent to HUD and the Department of Justice for any appropriate action they may wish to take.

Today, Air Force HROs have signed, non-discriminatory assurances from over 90,000 landlords who own approximately 1,146,370 rental units as well as numerous realtors who list with the HROs and private owners who list their homes for sale. In fact, only 45 discrimination complaints have been processed by Air Force HROs during the past six months, with 14 of these found to be valid.

The Air Force has an active "Fair Housing" program. However, as long as our personnel incur discrimination, there is still work to be done.

E&S

THE ROLLER COASTER

For the supervisor and the subordinate, there is a cyclic change in their emotional state which in turn affects their actions, motivations and productivity. The secret is to be aware of your own emotional state and to assess that of the other individuals who work with you.

by Capt James R. Kennedy, EIT

How do you react

- **As a supervisor, when a subordinate comes to your office and "blows his top?"**
- **As a subordinate, when your supervisor calls you in and "chews you out" for a seemingly trivial matter?**

What action do you take

- **When some days, your subordinate just isn't motivated?**
- **When you just don't seem up to par and your supervisor wants you to perform at peak output?**

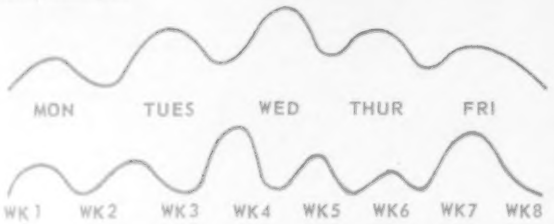
Such occurrences are similar to riding a roller coaster. You see the hill coming, but aren't sure what really is happening. You feel the peaks and the valleys, and no matter what you do, there are still the ups and downs. Often, the individual is completely "out of character." His behavior is just not what you would expect. The ups and downs observed seem rather random. What is really occurring is a cyclic change in the emotional state in all of us which in turn affects our actions, our motivation, our productivity.

Peaks and Valleys

The emotional state of individuals is constantly changing over time. If an individual is observed continuously from the start of the work day through to the end and on until the next day, emotional peaks and valleys become evident, very similar to those of a roller coaster track.

The individual begins the work day with an initial level of activity and builds to a peak. A drop then begins and continues toward the morning break time. A second climb begins after the break

and starts another decline toward lunch time. A similar pattern is formed after the lunch period. If longer periods are tracked, the small hourly bumps smooth out into larger day, week, month, etc, bumps.



This example oversimplifies the many factors which may be present: health, work conditions, work situation, home environment, weather, time of year, work and personal problems, etc. The greater changes in emotional state often occur so gradually that the supervisor cannot detect the change.

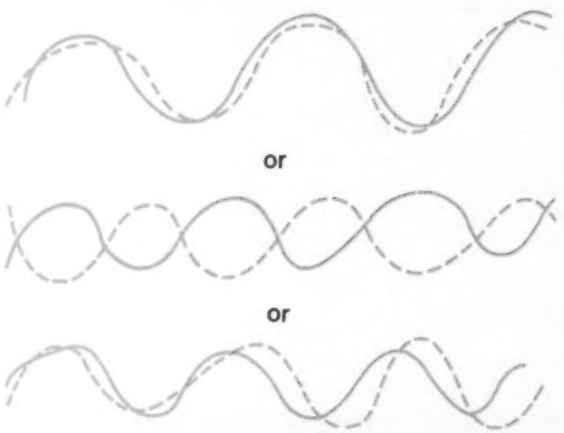
If the timetable could be compressed, these changes become more rapid and seemingly more prominent.

Such time compression occurs during a drastic change in the normal work routines such as during an "isolated" tour assignment.

The curves in all situations mentioned would differ for each individual and may even change shape over the observed time interval.

Gaps and Overlaps

If the emotional state curves of two individuals are superimposed, this could result



If the curves of several individuals in the chain of command are further superimposed, what results is a confusing mixture of curves much like that of several musicians playing different tunes at the same time.

In order to examine the relationships, only two individuals will be considered at a time—the supervisor and the subordinate.

Riding the Roller Coaster

An emotion is an involuntary response by a person to a real occurrence in the real world. The nature of the involuntary response depends on the individual and the situation. Supervisors do not have "handy-dandy" gauges with which to determine an individual's emotional state, his location on the curves, and just as important, just where the supervisor, himself, is on the curves. There are, however, indicators which can help. You can generally check yourself out to see if you are high or low on your roller coaster. You are high if you have feelings of self-satisfaction, love, pride, and good feelings about what will happen next. You are low if most of your feelings are uncomfortable emotions like fear, anger, guilt, jealousy, or an overall sense that you were "born to lose."

Another individual's emotional state can be inferred (for these purposes) from his behavior. For example, an individual who is riding on a peak will show signs of cheerfulness; is less prone to be easily upset; conflict is less likely; has a generally positive attitude; appears to work more diligently, etc. On the other end of the spectrum, an individual who is "down in the valley" is more antagonistic; grouchy; is upset easily; conflict is more likely; is less rational; has a generally negative attitude; appears to drag along; is abnormally quiet, etc. These are the two extremes. But the curve is continually changing. Emotions are tricky because even though they are involuntary, they depend so much on individual viewpoints. For example, at the midpoint of an isolated tour, one person feels good because he's "halfway home" while another feels depressed because his tour is "only half over."

We might expect that motivation and productivity would be at their highest when individuals are at their "peaks" and at their lowest when individuals are in their "valleys." The challenge for a supervisor is to identify the peaks and valleys and to take advantage of peaks by reinforcing the individual and minimizing the negative effects of the valleys by countering the depression. Remember, though, that both the supervisor and the subordinate are riding on separate roller coasters! Complications now set in.

Let's examine four such cases.

Case 1: The supervisor is at a peak; the subor-

dinate is in a valley. The supervisor is pushing, optimistic, energetic, willing to gamble, while the subordinate is making "mountains out of mole hills." The result is lower motivation and productivity.

Case 2: The supervisor is down in a valley; the subordinate is at a peak. The supervisor is grouchy, touchy, moody, unreasonable, extra-cautious, while the subordinate is ready to charge forward. The subordinate's attempts to charge forward are stifled. The result again is a lowering of the motivation and productivity of the subordinate.

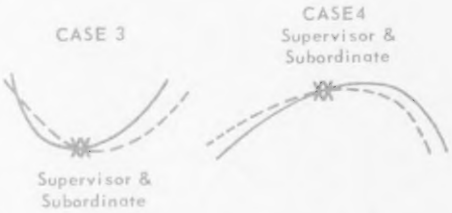
Case 3. The supervisor is down in a valley; the subordinate is also down in a valley. Conflict, violent disagreements, irrational behavior are exhibited by both. The result is that motivation and productivity are at their very lowest, possibly even negative.

Case 4: The supervisor is at a peak; the subordinate is also at a peak. All positive factors are working together. This is when 1 + 1 = 3! Motivation and productivity are at their highest. The supervisor and subordinate support one another. (It's like reviving the old adage "Let's make hay while the sun shines.") This is the time to push foward and expect to do the "impossible."

Hanging in There

The secret is for you to be aware of your own emotional state, your position on the roller coaster, and to assess that of the other individuals with whom you work; to be aware that your own emotional state affects that of other individuals, either positively or negatively; to understand that

***CAPTAIN KENNEDY** is a Course Director, Department of Management Applications, Civil Engineering School, Air Force Institute of Technology, Wright-Patterson AFB, Ohio. He earned both his bachelor's and master's degrees in industrial engineering and management from Oklahoma State Univeristy. He is an Engineer-in-Training in Oklahoma.*



there are times when another individual just cannot perk up and push forward with maximum effort; to anticipate emotional changes not only as a result of the cycle, but as a result of the compound effects of each individual involved, those in the chain of command and those who work with you; to change your emotional responses from involuntary to voluntary. One can at least compensate for the changes by either minimizing the negative effects or maximizing the positive effects.

Consequently, as a supervisor, you have a direct effect on the motivation and productivity of your subordinates. You can maximize the opportunities to improve motivation and productivity by adjusting your own approach to meet the needs of the subordinate based on his "roller coaster." Charge forward when he is at a peak and be compassionate and supportive when he is down in a valley. Don't allow your own roller coaster to wreck his. E&S

44 Selected for Promotion to Lieutenant Colonel

Forty-four civil engineering and services officers were named for promotion to lieutenant colonel by the Temporary CY 1978 Lieutenant Colonel Promotion Board. Those selected include:

Applegate, Edward T.
Bayless, William E.
Beauchemin, Alfred E., III
* Bowman, James D.
Cannon, George E., Jr
* Craig, William R., III
DeBlonk, Donald M.
Downer, David R.
Dukes, Douglas W.
Evans, Charles W.
Gage, Donald H.
Graf, Donald O.
* Haines, Thomas H., Jr
* Hamble, Charles L.
Ingamells, John R.
Kline, Norman H. G.
* Maloney, John J.
* Murphy, George T.
Nay, Marshall W., Jr
Nicholson, John C.
Olansen, John B., Jr
* Pahoresky, Herbert J.
* Pannage, Charles M., Jr
Parker, Evans T.
Pease, Birney T.
Pehlvanian, George P.
Pellek, John
* Pickering, Willis O., Jr
* Polzin, David J.
Purser, Tom V.
Richards, Paul A.
Sanpei, Francis T.
* Shady, Norman D.
Simmons, Donald R.
Smith, George L.
Stepetic, Thomas J., Jr
Stricklen, Herman L.
* Tessier, Richard J.
Thompson, Tommie N.
Verkest, William A.
Vines, Thomas L.
Wentworth, Dennis G.
Williams, David O.
Windham, Clifton T.

* Services Officer

Bulletins at Deadline

PROMOTIONS

Fourteen civil engineering officers received notification in early January that they had been nominated for promotion, one to brigadier general and 13 to colonel. They include:

Col John E. Catlin, Jr, DSC/Engineering and Services, HQ USAFE, named for promotion to brigadier general.

The following 13 officers were named on the colonel promotion list: **Stanley Bohinc; Daniel Burgess; John Colosimo; Francis Crowley; Arthur Hahn; Herman Husbands; Charles W. Jenkins; James W. Neal; Richard Noakes; John Shiffert** and **Guy York.** Promoted from below the zone are **James Hubbard** and **Eugene Wittenberg.**

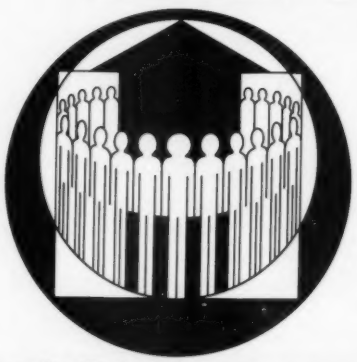
Previously, it had been announced that **Brig Gen A. G. Glover,** DCS/Engineering and Services, HQ Air Force Systems Command, was named a permanent Brigadier General.

Bordner Award Winners

The William H. Bordner Awards for the outstanding prime electrical generating and heating plants in the Air Force were presented in December. They are:

- **Monte Vergine, Italy (Air Force Communications Service):** Category I: Prime electrical generating plant with an installed capacity from 100 to 2,000 KW.
- **Shemya AFB, Alaska (Alaskan Air Command):** Category II: Prime electrical generating plant with an installed capacity over 2,000 KW.
- **Central Heating Plant, Davis Monthan AFB, Arizona (Tactical Air Command):** Category I: Heating plant with an installed capacity of 3.5 to 14 million BTU/hr.
- **Central Heating Plant, Tempelhof Central Airport (US Air Forces in Europe);** Category II: Heating plant with an installed capacity over 14 million BTU/hr.

ENGINEERS



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National Engineers Week - February 18-24

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